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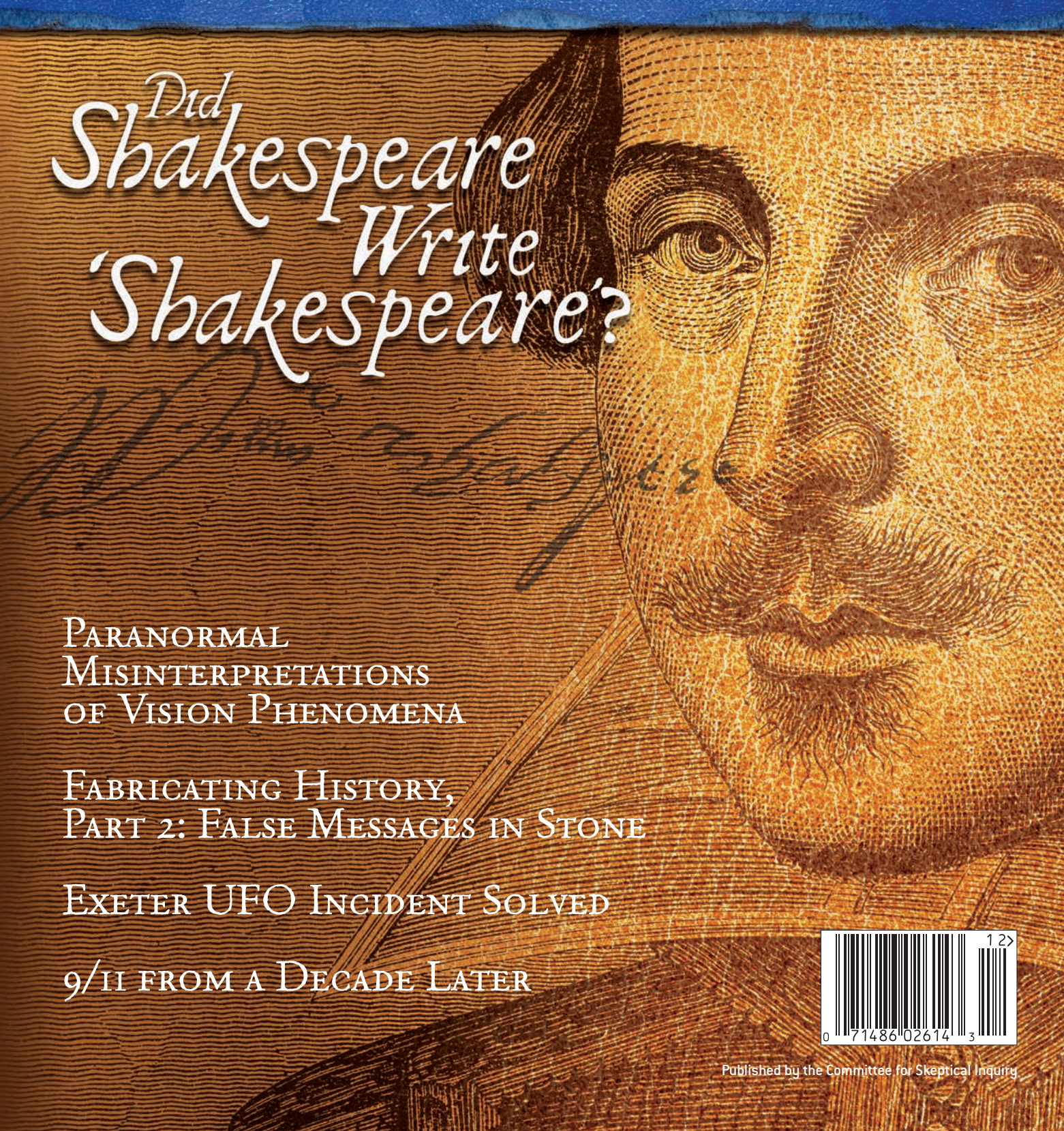

Did Shakespeare Write 'Shakespeare'?

Paranormal Misinterpretations of Vision Phenomena

Fabricating History, Part 2: False Messages in Stone

Exeter UFO Incident Solved

9/11 from a Decade Later

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From Shakespeare to American Archaeology

Our indefatigable Senior Research Fellow Joe Nickell takes on a claim in our cover story that goes back centuries but is new to the pages of SI: the bizarre notion that William Shakespeare didn't actually write the plays and poems attributed to him. If it seems to readers that Nickell has expertise in almost everything, they may be right. In this case his PhD in English literature and his experience with claims about literary fraud serve him well. But this is no stuffy academic paper. It's a fresh, readable, and fun look at how anti-Stratfordian pseudoscholars examine data "through the looking glass," twisting all reason, logic, and evidence to see what they want to see. Sound familiar? The processes have much in common with the other kinds of pseudoknowledge we examine regularly in these pages.

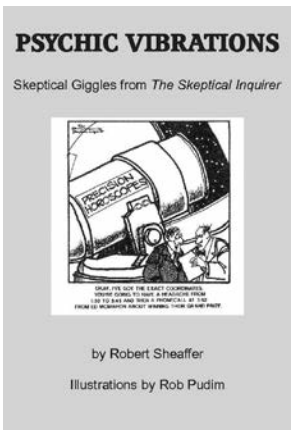
Nickell then joins with astronomer and retired military pilot James McGaha to solve—I don't think that is too strong a word—a classic UFO case going back forty-five years, the "Exeter" incident in New Hampshire.

Michael Mauser gives us an informed and fascinating look at vision phenomena—mostly processes right inside our eyes—that people sometimes misinterpret as paranormal.

We also continue the three-part series "Civilizations Lost and Found: Fabricating History" that began in our previous issue. Archaeologists Kenneth L. Feder (a longtime CSI fellow and author of two fine books on archaeological frauds) and Bradley T. Lepper (lead author of this issue's segment, "False Messages in Stone"), historian Terry A. Barnhart, and anthropologist Deborah A. Bolnick are providing an extraordinary examination of notorious claims that Egyptians, Hebrews, and Celts, among others, left their mark in pre-Columbian North America. In doing so our authors correct numerous distortions, including some outright fraudulent claims, presented in the DVD *The Lost Civilizations of North America.* And they give us a nicely nuanced look at how real archaeologists evaluate evidence about the real people who populated North America before Columbus.

* * *

Robert Sheaffer has compiled a book of the first two decades of his "Psychic Vibrations" columns from the SKEPTICAL INQUIRER. I am pleased to report they are graced by more than a hundred of the delightful drawings our longtime illustrator Rob Pudim has drawn for SI over the years. It is fun and informative to see both together. You can order the book, *Psychic Vibrations: Skeptical Giggles from the* Skeptical Inquirer, via Sheaffer's blog, BadUFOs.com.



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I hope to see many of you at our CSIcon conference in New Orleans October 27–30. It marks a resumption of Committee for Skeptical Inquiry/SKEPTICAL INQUIRER conferences. Our last was the "Hoaxes, Myths, and Manias" conference in Albuquerque in 2003.

—KENDRICK FRAZIER

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Inquiries from the media and the public about the work of the Committee should be made to Barry Karr, Executive Director, CSI, P.O. Box 703, Amherst, NY 14226-0703. Tel.: 716-636-1425. Fax: 716-636-1733. Email: bkarr@centerforinquiry.net

Manuscripts, letters, books for review, and editorial inquiries should be sent to Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 944 Deer Drive NE, Albuquerque, NM 87122. Fax: 505-828-2080. EMAIL: kendrickfrazier@comcast.net. Before submitting any manuscript, please consult our Guide for Authors for styles, reference requirements, and submittal requirements. It is on our website at www.csicop.org/publications/guide.

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The Age of Denialism: When Beliefs Trump Scientific Facts

Kendrick Frazier

We've all seen the face of denialism in discourse involving politically and socially charged scientific issues. Climate change, evolution, vaccines, AIDS, the 9/11 attacks, the Holocaust—they've all attracted powerful denialist movements that, from the viewpoint of most science-oriented people, seem especially resistant to scientific evidence.

Why has denialism become such a big obstacle to scientific understanding? What is responsible for its rise and staying power? What, if anything, can be done about it? And what is the role of the science journalist in confronting it?

Like skeptics and scientists, science journalists find themselves continually facing denialist arguments from their audiences and the public. The problems denialism raises are increasingly troublesome, and if research cited at a recent panel discussion on the topic is any guide, the situation may be virtually intractable. Nevertheless, some positive suggestions did emerge, among them to tell better stories—compelling true stories dramatizing the scientific facts.

These were among the conclusions of a provocative consideration of "Journalism in the Age of Denial" at the World Conference of Science Journalists in Doha, Qatar, June 27–29, 2011. The panel was organized and moderated by Cristine Russell, president of the Council for the Advancement of Science Writing, former *Washington Post* science reporter, and senior fellow at Harvard's Belfer Center for Science and International Affairs.

Like scientists and educators (and skeptics), science journalists operate under the basic assumption that more and better information is always preferable. They provide accurate scientific information to the public and hope it will inform scientific understanding about important public issues. With denialism, it doesn't work that way.

As I somewhat plaintively titled my editorial in our September/October 2011 issue (written before this conference), "Who Really Wants Reliable Scientific Information?"

"Telling people with strong partisan beliefs that something is not true rarely convinces them," science journalist Shankar Vedantam, author of *The Hidden Brain*, told the audience. "In fact, refutation causes the belief to go up."

And there you have it. Providing people who hold strong beliefs reliable information that might undermine those beliefs causes them to cling to those beliefs even more strongly.

Vedantam, who recently moved from the *Washington Post* to National Public Radio (see his SI piece, "Difficulty in Debunking Myths Rooted in the Way Mind Works," January/February 2008), gave an informed tutorial on denialism via Skype from his home in the United States (at 4 AM his time) when a family illness kept him from traveling to Qatar.

He described research showing that rather than being formed by evidence, our beliefs are tied to our loyalties to ideas and causes. Emotional ties predict what one is willing to believe. "We develop friendships and loyalties that shape our beliefs. This process largely happens at an unconscious level. Most of us don't stray far from the beliefs of our friends." When facts contradict beliefs, cognitive dissonance then leads us to deny the facts. "We will selectively filter out the facts that counter our views."

Debora MacKenzie, a writer in the Brussels office of *New Scientist* and author of a 2010 cover article "Living in Denial," reinforced that point. "Most denialists simply think the way most people think—in terms of feelings, familiar stories, and their own group identity," she emphasized. When they hear a conflicting claim, cognitive dissonance takes over. "It is far easier to deny the science than to accept that your whole worldview is wrong."

Providing people who hold strong beliefs reliable information that might undermine those beliefs causes them to cling to those beliefs even more strongly.

Yves Sciama, a freelancer from France, wondered whether the honeymoon be-

Shankar Vedantam, author of *The Hidden Brain*

tween science and society earlier in the twentieth century is now coming to an end. "Scientist-bashing is becoming more common," Sciama noted, whereas it was almost unheard of decades earlier.

The main concern of Philip Hilts, head of the Knight Science Journalism Fellowships at MIT, is the "deliberate misuse of nonsense." He said tactics used by the tobacco companies from 1953 to 1994 to try to counter the evidence that smoking causes cancer are now being used by oil companies to try to counter the evidence of climate change. The tobacco companies tried to assert that there was always doubt. If necessary, they would "buy a scientist to say so."

Now, with climate change, Hilts said, the vested interests are again "deliberately manipulating for gain." He said the role of science journalists is to "chase down the folks" who are misusing and misrepresenting the scientific evidence.

Vedantam likewise reserved his harshest judgments for those who "actively and actually disbelieve" what they know to be true, the tobacco industry again being the leading example.

Yet Vedantam noted that denialism is not monolithic. He called for a slightly more nuanced, "granular" analysis. In fact he said using the term *denialism* can be name-calling. (But what else to call it? I ask.) Denialism comes in different degrees, and the levels shouldn't always be conflated. Stage one is disbelieving the evidence by trusting only what our senses reveal to us (his example: the Sun seems to go round Earth; my example: greenhouse gases being added to the atmosphere are invisible and so are easily ignored). A second stage relates to the complexity of scientific evidence, especially about predicting the future. He suggests that much of the doubt about climate change is a different kind of "skepticism" (about prediction) than that exhibited, for instance, by Holocaust deniers.

("Skepticism" is itself another misleading term in this context. Science-oriented, evidence-based skeptics prefer to call those who don't accept good scientific evidence doubters or deniers.)

He and the others seemed to agree that denialism is worsening. "It is hard to believe that denialism is not expanding," Vedantam said. He noted that in regard to global climate change, disbelief in the United States is going up. (Will this summer's prolonged record high heat across much of the United States change that perception? Not likely, if Texas Governor Rick Perry's strange anti-global warming—and anti-evolution—comments just days after announcing he was a candidate for president are any guide.)

Sciama raised the interesting issue of differing national attitudes toward climate change. Surveys show that in Brazil, 92 percent of the people say global warming is taking place, and only 5 percent think mankind is not contributing to global warming. "In the developing countries trust in science is comparable to that in the U.S. in the 1950s," Sciama said. Still, why denial of global warming dominates "in Anglo-Saxon countries—U.S./U.K./Australia—remains to be explored."

If reliable scientific facts don't have any positive effect in changing the views of deniers—and in fact cause them to cling to their beliefs even more strongly—where does that leave us? It's a rather bleak picture. It is discouraging not only for science journalists but also for everyone concerned that we lack well-informed citizens in modern democracies where scientific and technical questions affect virtually every national issue.

The panelists did offer a few suggestions. Science journalists' job is to communicate the science effectively, MacKenzie noted. That being the case, and if facts don't sway denialists and others who hold strong views, she suggests we "speak the language of anecdotes, feelings, and group identity." She was serious. Stories have a much stronger impact on people than facts and evidence, and therefore effective science communication should employ these same tools to get across the science. She called for using "familiar narratives"; for instance, the fact that families have actually lost children to diseases that could have been prevented by vaccinations. That's a narrative that is not only powerful but true.

Science-oriented, "just the facts, please" people may feel that tactic is beneath them, but MacKenzie said it is not. "It may be uncomfortable, but if stories help communicate the science, then do it."

Still another constructive suggestion came from an audience member and risk-communications expert, David Ropeik of Harvard. (He spoke at another panel session on risk reporting.) Ropeik, in his comments to the panel and in a brief conversation afterward with the SKEPTICAL INQUIRER, said denialism is a very real thing, but it can and should be quantified, and then managed, like any risk-versus-perception gap. Dealing with it in this straightforward way is an effective and rational approach. He elaborates in his 2010 book *How Risky Is It, Really? Why Our Fears Don't Always Match the Facts.*

Science journalists will no doubt keep writing their good science stories. Perhaps the SKEPTICAL INQUIRER's experience in dealing with the paranormal and pseudoscience has something to offer here. We have no illusions that our evaluations will persuade hardcore paranormalist believers. But opinion leaders in science, education, and media—and a vast segment of the public who do want good, reliable information—tell us they find them useful. Some even express deep appreciation. Denialism won't disappear, but good information still has a thirsty audience.

Pseudoscience, Mythbusting, Evolution Gain Attention of World's Top Science Journalists

KENDRICK FRAZIER

The World Conference of Science Journalists in Doha, Qatar, June 27–29, could at times have been mistaken for a classic skeptics conference.

This is not altogether surprising, considering that science journalists, as the intermediaries between scientists and the public, encounter the same kinds of public misunderstanding and misperceptions (plus outright distortions) about science and the natural world that skeptics combat.

More than seven hundred science journalists from ninety countries—half of them from Africa, Asia, and the Middle East—met in a sprawling new university/academic research complex of the Qatar Foundation on the outskirts of Doha to consider issues they encounter in their professional lives. It was the first such conference outside the Western world.

I participated in a session on "Investigating Pseudoscience" with other skeptics and science journalists from Russia, Hungary, and Argentina. Moderator Tatiana Puchigina, who works in Moscow for the online news site Science and Technology in Russia, told an interviewer afterward that she arranged the session after seeing how severe of a problem pseudoscience is in Russia. (Nine years ago SI devoted most of an entire issue to "Science and Pseudoscience in Russia," July/August 2002, and it is clear that the situation hasn't improved much since then.)

Alexander Sergeev, science editor of the popular Russian magazine *Vokrug Sveta* and science observer for Russian Radio Liberty, agreed with her bleak assessment. He reported that after three well-known Russian physicists, all members of the Russian Academy of Sciences and its commission on pseudoscience and science fraud, publicly exposed the activities of a pseudoscientist close to the leaders of Russia, they were hit with a $50 million lawsuit. Among the three is Eduard Kruglyakov, who wrote one of those 2002 SI articles.

'Investigating Pseudoscience' panelists (from left): Frazier, Vágó, Agostinelli, Federico Kukso of Argentina (translating), and Sergeev.

Sergeev emphasized that in Russia much pseudoscience is not just annoying misconceptions and misunderstandings but "also a new kind of criminal activity dangerous for science and society."

Sergeev emphasized that in Russia much pseudoscience is not just annoying misconceptions and misunderstandings but "also a new kind of criminal activity dangerous for science and society." It is carried out for profit, and it involves corruption of public officials and other criminal acts. It is a highly troubling issue. In Russia, he lamented, "pseudoscience is developing dynamically, and the old counter-actions against it are now ineffective."

Another speaker, István Vágó, former head of the Hungarian skeptics group and a prominent Hungarian television host, sees some of the same problems in Hungary. After scientific socialism was banned, faith in science declined and the population's new freedoms resulted in a rise of pseudoscience and scandals. Vágó blamed television for part of the problem: television provides easy answers to hard questions. He also lamented that unhealthy people waste so much money on worthless and bogus pseudo-medical treatments.

Alejandro Agostinelli, a freelance science journalist in Argentina, described his experiences in active skepticism. From 1990 to 1994 he was a member of CAIRP (the Argentinian Center for Investigation and Refutation of Pseudoscience), the first Latin American organization with the same goals as the American CSICOP, now our Committee for Skeptical Inquiry (CSI). The group worked closely with the local media in examining alternative medicine, folk healing, astrology, mental control, mystic healing powers, and UFOs. Among its successful activities: in 1995 CAIRP used experts and props to demonstrate that the filmed autopsy of the Roswell "ET" was a fraud.

For my part, I offered an overview of science and pseudoscience in modern America. I treated anti-science as a special case that is especially virulent in public policy today, in which proponents are actively hostile to scientific ideas—or at least to those perceived to yield answers incompatible with their ideology and beliefs. I urged science journalists to consider investigative articles about pseudoscience as an opportunity not only to expose bogus claims but also to inform people in an entertaining way about real science and how it differs from pseudoscience.

That session was followed by a related one with the intriguing title "Warriors Against Claptrap: Are Myth-Busters the New Generation of Civic Scientist?" New myth-busting groups and efforts are springing up all over. This panel addressed the impact of some widely publicized myth-busting campaigns that have captured the public imagination. The popular U.S. television show *Myth-Busters* was just one of the forums described. Julia Wilson and Leonor Sierra of Sense About Science, a U.K. group that promotes public myth-busting by young people, headed that discussion along with science journalists Ylann Schemm of Elsevier in the Netherlands, Alaa Ibrahim of American University in Cairo, and Pallab Ghosh of the BBC in the United Kingdom. Wilson described an effort in which a group of young people in the United Kingdom decided to challenge companies' claims about "detoxing." They asked what evidence supported the detox claims; when the companies admitted they had none, the group publicized that fact (with transcripts of the responses) and gained wide attention.

Veteran BBC science broadcaster Ghosh concluded with some philosophical wisdom about the nature of the profession. Science journalists' prime responsibility is to act in the interests of their audience. Sometimes they need to be brave and take on important stories, and they have a role and responsibility to bust myths. He called it "kick-ass journalism."

That session was followed by a plenary on "Evolution and the Evolving World of Science Journalism." *Scientific American* Editor Mariette DeChristina, past president of the National Association of Science Writers, moderated a panel whose members came from South Africa, Argentina, and the United States. But the lead talk was by our Committee for Skeptical Inquiry colleague Eugenie C. Scott of the National Center for Science Education. She noted how the journalistic principle of "balance" can be a problem in reporting on evolution. As she says, fairness and balance apply to *opinion*. "It is not an opinion that the Earth goes around the Sun. . . . It is not a matter of opinion that living things have ancient ancestors."

(The "balance" problem is well understood by science journalists, but it remains a serious issue in general journalism, where non-expert reporters frequently feel they must give creationist views equal weight to the long-accepted scientific facts of evolution.)

Scott forthrightly condemned a 2009 incident in which a noted science magazine, the British weekly *New Scientist*, published a cover announcing in large print, "DARWIN WAS WRONG." (The article itself was about horizontal gene transfer and, says Scott, wasn't the real problem.)

"The *New Scientist* cover is simply wrong," Scott bluntly told the assembled journalists. "This cover was extremely irresponsible." She noted that just two days later opponents of evolution on the Texas Board of Education cited the cover as evidence that evolution is wrong. *New Scientist* Editor Roger Highfield lamely responded at the time that he knew creationists would probably "take it out of context." This was hardly any surprise to Scott, who wondered why he then did it. "Cover the science," she said, "but don't make it easy for creationists to take it out of context."

Science Recognizes Morrison's Fight against Doom Hysteria

Committee for Skeptical Inquiry fellow and frequent SKEPTICAL INQUIRER contributor David Morrison is the subject of the newsmaker interview article in the August 19 *Science* "as the scientific community's unofficial defender of reason again the onslaught of . . . 'cosmophobia'"—irrational fears of end-of-world doom from harmless comets (such as Elenin) and nonexistent rogue planets (such as Nibiru). The article chronicles Morrison's tireless efforts to correct falsehoods and misinformation about supposed astronomically caused impending doomsdays. It can be read online at www.sciencemag.org/content/333/6045/928.summary?sid=0b572d2f-f680-4303-8e6d71b6d09820ac.

This article follows on an earlier one, in the same series in *Science* (June 10, 2011), on frequent SI contributor John Mashey's efforts to combat falsehoods and misinformation about climate change.

Psychics Fail Tests on ABC Special 'Beyond Belief'

BRYAN FARHA

The ABC television network aired a one-hour *Primetime Nightline* special on August 17, "Beyond Belief," in which psychics failed test after test. To the skeptic, the psychics' demonstrations were weak, including the usual cold reading techniques, guessing, divination, suggestion, and telling people what they want to hear. Much of the unsuspecting public, however, might find this deception believable. Of particular acclaim was the superb performance of Banachek—a magician and the administrator of the James Randi Educational Foundation's Million Dollar Paranormal Challenge.

The network used an unusual three-host format.

The host of the first segment was *Good Morning America* anchor Josh Elliot. He received a reading from "medium" James Van Praagh. Van Praagh started with the usual cold reading techniques, such as telling Elliot about his childhood, "There's a sense of being wanted." Van Praagh proceeded to supply one accurate insight after another—and far more specifically than when cold reading. But Elliot skeptically reported that all information connected to Van Praagh's apparent "hits" was available on the Internet. Chalk this one up to research and homework.

In the next segment, presented by Juju Chang, several contenders tried to snare James Randi's million dollar prize, including a medium who failed to divine the only dead person's photo (Elvis) in a series of envelopes, and a tarot card reader who failed to match live subjects with their biographies. Even though the failed mediums agreed to the protocol, ABC disappointingly elected to include their complaints regarding testing conditions. As usual, Randi did a good job explaining flim-flam with his no-nonsense approach with the media.

David Wright hosted the next segment, which began with "house healers" in Oakland, California, performing an exorcism of sorts at the request of a real estate agent. The house in question apparently wouldn't sell because of "bad energy" from the previous owners. The property still did not sell—even after mediums (trained at the Berkeley Psychic Institute) "cleansed" the house. This segment was basically devoid of a skeptical perspective.

Elliot skeptically reported that all information connected to Van Praagh's apparent "hits" was available on the Internet. Chalk this one up to research and homework.

The next segment was presented again by Juju Chang. Twenty psychic detectives had claimed to be able to find a missing child. Sixteen months later, the child was still missing. Credit Chang for asking very skeptical questions to some of the psychics. Banachek returned for this segment and did an excellent job of explaining how psychics waste authorities' time and resources with their "wild goose chases."

ABC had a retired FBI agent explain that in his thirty-year career he never saw a psychic help find a single missing person. Then the program described the cruelty of Sylvia Browne's most horrific failed prediction of her career, when she told the parents of missing child Shawn Hornbeck in 2004 that their son was dead—only to have him found alive and well in 2007. Banachek called Browne's actions "horrible" and "disgusting." In this segment, Banachek did a brilliant job of demonstrating to Chang how to duplicate the effects of alleged psychic ability. Asked about people who claim to communicate with the dead, Banachek replied, "I think those people are scum. I really, really think they're scum."

David Wright did the final segment on "psychic moms" such as Allison DuBois (from *The Real Housewives of Beverly Hills*), who inspired the television show *Medium*, and Rebecca Rosen. These mediums emphasize the subject's mother in their readings. This was clearly the program's weakest segment because it made no attempt to provide a skeptical perspective of the medium's reading of Wright. In fact, Wright claimed their readings were accurate and revealed "details that don't pop up on Google." But after the show's conclusion, the pertinent details from the reading were discovered in an earlier *New York Times* wedding announcement, which was posted on Twitter by a user.

Overall, ABC did a decent job of fair presentation, and there was adequate skeptical representation. Banachek's magic, coupled with his critical thinking approach, made for the perfect educational tool. He was brilliant. Removing the segments by Wright, who was too quick to believe, would have made for an even more skeptical program.

The day after the program aired, the James Randi Educational Foundation challenged the show's psychics to be tested for the million dollar prize under randomized, controlled conditions without the use of cold reading. Said Challenge director Banachek, "We're issuing a challenge to these fakers. . . ."

We'll all anxiously await their responses, but don't hold your breath.

Bryan Farha is professor of behavioral studies in education at Oklahoma City University. He is a CSI consultant and editor of *Paranormal Claims: A Critical Analysis*. His email address is bfarha@okcu.edu.

"It is error only, and not truth, that shrinks from inquiry."
– Thomas Paine

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New Jersey Supreme Court Overhauls Eyewitness ID Rules

BENJAMIN RADFORD

In August the New Jersey Supreme Court issued new rules to prevent innocent people from being wrongly convicted of a crime based upon eyewitness testimony. According to an article in the *New York Times*,

> The New Jersey Supreme Court, acknowledging a "troubling lack of reliability in eyewitness identifications," issued sweeping new rules . . . making it easier for defendants to challenge such evidence in criminal cases. The court said that whenever a defendant presents evidence that a witness's identification of a suspect was influenced, by the police, for instance, a judge must hold a hearing to consider a broad range of issues. These could include police behavior, but also factors like lighting, the time that had elapsed since the crime or whether the victim felt stress at the time of the identification.

The chief justice, Stuart J. Rabner, wrote in a unanimous decision that the legal system had to catch up with scientific evidence in order to ensure justice:

> Study after study revealed a troubling lack of reliability in eyewitness identifications. . . . From social science research to the review of actual police lineups, from laboratory experiments to DNA exonerations, the record proves that the possibility of mistaken identification is real. Indeed, it is now widely known that eyewitness misidentification is the leading cause of wrongful convictions across the country.

The idea that people often incorrectly see, remember, and report what they experience is not merely theory but a proven fact; there are over two thousand published scientific studies demonstrating it. By some estimates, as many as one-third of eyewitness identifications in criminal cases are wrong, and nearly two hundred people who were convicted of crimes based on positive eyewitness identifications were later exonerated through DNA evidence.

The problem of eyewitness unreliability (and memory unreliability) has been known in academia for years; psychologists such as Elizabeth Loftus have long documented how sincere, honest people make important mistakes when reporting what they have seen. But it's only recently that the legal system has recognized—and taken steps to mitigate—the problem of eyewitness misidentification.

The research also has implications for other types of eyewitness reports. The bulk of evidence for "unexplained" reports is eyewitness accounts. Many people who believe in the existence of Bigfoot or extraterrestrials, for example, do so based on the disproven premise that sincere, honest eyewitnesses can't be mistaken.

Fortean Author Hilary Evans (1929–2011)

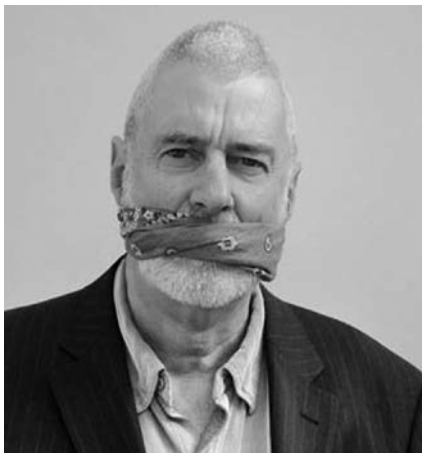
ROBERT SHEAFFER

Hilary Evans, a leading British Fortean author and researcher of "marginal human experiences," died on July 27, 2011. He was the author of many books, including *Visions, Apparitions, Alien Visitors* (1984) and *Gods, Spirits, Cosmic Guardians* (1987). Evans was a founder of what is called the "psychosocial hypothesis." It attributes the perception of anomalous phenomena such as UFOs, apparitions, and so forth to a sort of psychodrama occurring inside the percipient's head that is shaped by society's expectations and beliefs. It is very influential today among British Forteans, many of whom are quite skeptical of the literal truth of paranormal claims.

Evans and his late wife, Mary, operated the Mary Evans Picture Library in London, a major repository of over one million images. The Evans' private collection of esoteric books and Victoriana was legendary, and Hilary's knowledge of "anomalistic" subjects was extraordinary. He met frequently with colleagues and was responsible for much sharing of information. I met Evans at the *Encounters at Indian Head* conference in New Hampshire in 2000, which was organized to scrutinize the Betty and Barney Hill UFO abduction story. He compared the Hills' (at the time novel) narrative to earlier accounts of otherworldly beings and religious visions, finding many common themes and formulations in both and suggesting that a "life crisis" of the percipient was likely the cause. Whenever the trite phrase "a gentleman and a scholar" is used, there can be no better illustration of that ideal than Hillary Evans.

SensaSlim Lawsuit Seeks to Silence Skeptics

GURMUKH MONGIA



Ken Harvey is in a legal battle with the makers of the dubious product SensaSlim.

Skeptical activists have reason for concern when organizations invested in questionable treatments take action intended to silence their critics. The recent case of Simon Singh and the British Chiropractic Association (BCA) was one such noteworthy case that received a good deal of popular support and helped to highlight the need for libel reform in the United Kingdom.

Singh's victory over the BCA's accusations of libel also highlights the importance of standing behind the people who challenge these organizations so that they may persevere against them. It is in this spirit that the Australian Skeptics are calling for support from the skeptical community for Ken Harvey, who put in a complaint to Australia's Therapeutic Goods Administration (TGA) regarding a product called SensaSlim and was subsequently hit with an $800,000 (AUD) defamation suit.

SensaSlim is advertised as a miraculous weight-reducing oral spray. Its manufacturer claims it is the result of twenty years of research and that its efficacy has been proven in a large-scale clinical trial involving over eleven thousand people from over one hundred countries. This trial has not been published in any peer-reviewed medical journals, however, and critics who have looked into the matter are unable to locate the Swiss research institute that supposedly performed the study. They allege that the institute's website, in a page claiming to list its staff, instead features images of doctors grabbed from the website of a lung clinic in the United States.

Allegations have come to light from the Australian Competition and Consumer Commission (ACCC) of a relationship between SensaSlim and a convicted felon and con artist named Peter Foster. Foster is known to have perpetrated illegal schemes in the past, including the creation of several fraudulent slimming products such as the Cho Lo and Bai Lin slimming teas and Trimmit diet pills, among others.

The Australian Skeptics are encouraging like-minded individuals to support the fight against organizations that resort to these kinds of tactics. Ken Harvey is currently engaged in a legal battle with SensaSlim because he dared to complain to the TGA. Those who wish to support Harvey are encouraged to contact the Australian Skeptics by email at supportken@skeptics.com.au. Tim Mendham, executive officer of the Australian Skeptics, may also be contacted by phone at 02 8094 1894 for information on how to donate. In addition, checks made out to Australian Skeptics may be sent to PO Box 20, Beecroft 2119, Australia.

AAAS Condemns Personal Attacks on Climate Scientists

Those who seek to undermine and discredit the findings of modern climate science have increasingly been resorting to legal action, threats, harassment, and other decidedly nonscientific attacks directed against climate scientists themselves. The situation has been of growing concern to the world scientific community.

Now the board of directors of the American Association for the Advancement of Science—publisher of the leading journal *Science* and dedicated to advancing science around the world—has issued a formal statement calling for an end to such personal attacks on climate scientists.

"We are deeply concerned by the extent and nature of personal attacks on climate scientists," the statement, issued June 28, reads. "Reports of harassment, death threats, and legal challenges have created a hostile environment that inhibits the free exchange of scientific findings and ideas and makes it difficult for factual information and scientific analyses to reach policymakers and the public. This both impedes the progress of science and interferes with the application of science to the solution of global problems."

The statement says science is a self-correcting system that has well-established methods to resolve disagreements over interpretation of data; "scientists should not be subjected to fraud investigations or harassment simply for providing scientific results that are controversial." Policymakers should not be able to subvert the peer-review processes of science, it says.

"AAAS vigorously opposes attacks on researchers that question their personal and professional integrity or threaten their safety based on displeasure with their scientific conclusions," the statement continues.

The full statement is on the organization's website (www.aaas.org).

Budd Hopkins (1931–2011): Pioneering UFO Abductionist

ROBERT SHEAFFER

The famous UFO abductionist Budd Hopkins succumbed to cancer in New York City on August 21 at the age of eighty (www.intrudersfoundation.org/inside.html). The "UFO abduction" scenario changed significantly after the publication of Hopkins's book *Missing Time* in 1981. Prior to that, UFO abductions were said to occur only when people ventured out to lonely, deserted places late at night and encountered aliens (see, for example, the cases of Betty and Barney Hill and Travis Walton). Hopkins's contribution entirely severed the connection between UFO sightings and UFO abductions. Hopkins wrote of a new "abduction scenario that is, if anything, even more disturbing to contemplate. Many people have simply been taken from their homes while they were either asleep, or engaged in some quotidian activity, like watching television or reading" (*Missing Time*, p. 79). Often the aliens, and their helpless prey, simply float through closed windows or even walls. In such cases, the law of gravity and all of Newton's Laws of Motion seem to be suspended. To explain why nobody ever sees or photographs someone else being abducted, Hopkins suggested that the aliens have the ability to make themselves and their abductees invisible during this process.

Hopkins was a member of the famous troika of UFO abductionists, along with John Mack, MD, and David Jacobs (who is now the sole survivor), during abductology's heyday in the early 1990s. Hopkins was the founder and executive director of the Intruders Foundation, taking its name from his 1987 best-selling book *Intruders*, which in 1992 was made into a primetime miniseries on CBS-TV. Hopkins was one of the organizers of the 1992 Abduction Study Conference at MIT sponsored by physicist David Pritchard, which I attended.

Each of the several times I met Hopkins I attempted to engage him in a substantive discussion. He would have none of it, and his attitude toward me (and likely toward all skeptics) was always hostile. Hopkins was not one with whom to have a discussion or debate. He was right, you were wrong, and you were probably stupid as well; it was that simple. Hopkins concealed flaws in cases he was proclaiming to the world were ironclad proof of abductions. His ex-wife Carol Rainey became disillusioned with his careless research and duplicity and became one of his most severe critics. For more about Rainey contra Hopkins, especially the Brooklyn Bridge Abduction ("Levitated Linda"), see my "Abductology Implodes" ("Psychic Vibrations," SI, May/June 2011). I also discussed "Levitated Linda" in my "Psychic Vibrations" column in the Spring 1993 SI, which has been reprinted in the new book *Psychic Vibrations: Skeptical Giggles from the* Skeptical Inquirer (2011).

Hopkins was not one with whom to have a discussion or debate. He was right, you were wrong, and you were probably stupid as well.

Skeptic's Dictionary for Kids

GURMUKH MONGIA

The growth of the skeptics community has resulted in an increase in online resources, but most of them have been created with a specific audience in mind: most often a well-educated, older one. But the exciting fact is that younger and younger minds are becoming interested in skeptical topics. This is an encouraging development; however, it seems that resources geared toward this demographic have been slow to develop. Robert Carroll of the Skeptic's Dictionary noticed this discrepancy and took action. By enlisting the help of pre-teen consultants, Carroll has developed a new branch of the Skeptic's Dictionary: the Skeptic's Dictionary for Kids!

This new resource offers skeptical insights written in kid-friendly language and includes plenty of illustrations and links to sound files to help with the pronunciation of difficult words. There are, at present, forty-five entries in the Skeptic's Dictionary for Kids, all written for the benefit of children ages nine and up. This is a rich resource for children in general, especially for children who love topics like aliens, ghosts, and cryptids. The website, which is free of advertisements, is available at sd4kids.skepdic.com.

Gurmukh Mongia is a computer scientist working in the field of web development. He currently operates a blog and podcast related to critical thinking, *The Dumbasses Guide To Knowledge* (www.dumbassguide.info).

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9/11: Perspectives from a Decade Later

CLARK R. CHAPMAN and ALAN W. HARRIS

A year after the terrorist attacks of 2001, we wrote in a SKEPTICAL INQUIRER cover story (Chapman and Harris 2002) that the resulting damage *to our society* was largely self-inflicted. Not that we, the victims, were responsible for the attacks: al-Qaeda and the late Osama bin Laden were accountable, of course, for killing three thousand people and destroying billions of dollars worth of property, notably the World Trade Center. Yet the damage to our society has been vastly greater. (For comparison roughly three thousand people died on Americanhighways during September 2001, but these deaths had no long-lasting consequences to the nation.) It was bin Laden's hope that our fearful *responses* to the attacks might result in more costly repercussions, which indeed have occurred and continue even today; he hoped they would undermine our economy and society. We argued that rational skepticism could mitigate (not eliminate) our irrational, self-damaging behavior. We claimed that our nation was not facing an existential crisis; rather, our leaders were enabling the terrorists to win by playing into their hopes that we would respond to the attacks with exaggerated fear.

To our surprise, many SI readers disagreed. Letter writers (SI Reader's Forum, January/February 2003, pp. 61–65) argued that the barbarians were indeed at our gates, that the future of our country was actually imperiled. More than one suggested that the attacks were the first salvo in a sure-to-escalate war, like Hitler's first invasions or Pearl Harbor. Some believed there would be an increasing frequency and magnitude of terrorist attacks. National polls in 2002 (*New York Times*/CBS Poll 2002) showed that 25 percent of Americans believed that "another terrorist attack in the United States" was "very likely" within the next few *months*; another 45 percent felt it was "somewhat likely." Widespread but plainly irrational worries that "you or your family will be a victim of a terrorist attack" have abated little during subsequent years (over one-third of Americans responded as recently as 2009–2011 [AP-Gfk Poll 2011] that they were either "somewhat" or "very" worried about personally becoming victims of terrorism).

In short, common perceptions about the terrorist threat were nearly as distorted from reality as beliefs in astrology, the foreign birth of President Obama, haunted houses, and other topics treated in these pages, including conspiracy theories about 9/11 itself (covered extensively in the July/August 2011 issue of SI). Meanwhile, we have faced very real perils during the past decade as a society (e.g., the economic crisis), as regions (e.g., hurricanes in New Orleans and the Gulf Coast), and as individuals (e.g., heart disease). Of course, a major terrorist attack remains a slight possibility, as does the impact of a huge asteroid or a nuclear power-plant meltdown. As the Japanese have recently experienced, a low-probability tsunami and nuclear disaster *can* happen. But as individuals and as a society, we literally cannot afford the massive expenditures that would be required to try to eliminate all low-probability threats. We must respond rationally to the likelihood and objective seriousness of each threat.

The last decade has demonstrated that our fears of terrorism were indeed exaggerated, despite occasional terrorist incidents (at levels similar to terrorism in the decades preceding 9/11). Consider the resulting economic impacts. The stock market immediately fell about 15 percent, involving a loss of market capitalization of several trillion dollars, a thousand times the loss of the buildings. Other impacts during the year following the attacks included severe downturns for the airline and hospitality industries and the expensive establishment of security operations at public buildings around the country. Concerns about terrorism, in the context of 9/11, were the stated reasons for initiating the wars in Afghanistan and Iraq, although other considerations were also at work. A recent estimate (Belasko 2011) of the U.S. government appropriations, so far, for the "War on Terrorism" (narrowly defined as the Afghanistan and Iraq wars) is $1.3 trillion. Since the expensive wars were not "paid for," or rather they were paid for by increasing the national debt, some argue that our national response to terrorism is at least one significant cause—though there are of course others—of the economic crisis of the past few years. In this sense, the al-Qaeda goal of enticing the United States to enter wars of attrition was partly achieved.

Other, more subjective repercussions from 9/11, which polls show many people see as costs to society, include the inconveniences of Transportation Security Administration (TSA) procedures at airports, compromises of personal freedoms, invasion of privacy (for example, governmental eavesdropping on phone calls of citizens), discrimination against Muslims, torture of potential informants, and so forth. Of course, these are intertwined with political and religious attitudes, so we cannot know the degree to which other causes of such cultural and societal shifts were also at work. But the cliché that we are now "living in a post-9/11 world" documents the magnitude of our irrational, fear-induced augmentations to the objective damage of the 9/11 attacks.

We are disappointed and puzzled that, a decade after the attacks, there has been minimal return to the status quo ante. The Homeland Security infrastructure continues to grow. While people travel by air again, expensive X-ray and microwave machines proliferate at airports. The war expenditures and deaths (of U.S. soldiers, mercenaries, and foreign civilians alike) diminish at an agonizingly slow rate, though less than one hundred al-Qaeda fighters are estimated to remain in Afghanistan (Politifact.com 2011). The Congress, the Executive Branch, and the Supreme Court continue to chip away at our once revered rights to privacy and freedom from unwarranted searches. Polls show fears of terrorism barely retreating, even after years of zero civilian deaths by jihadis on U.S. soil (according to a RAND report [Jenkins 2010]). Over-reaching provisions of the post-9/11 Patriot Act have been recently extended. It seems that we as a society, and many of us as individuals, are incapable of returning to our pre-9/11 existence. Day after day, year after year, the government, driven by perceived public pressure, persists in advancing the terrorists' goals.

Our disproportionate individual and societal responses to 9/11 exemplify the "perception gap," which Harvard risk analyst David Ropeik discusses in his book *How Risky Is It, Really?* (Ropeik 2010). Human beings meld the objective "facts" about relative risks with their own affective feelings and subconscious fight/flee responses to hazards. Ropeik argues that the perception gap is a dangerous hazard in and of itself. Ropeik quotes estimates that during the few fearful months following 9/11, about one thousand additional deaths occurred on U.S. highways because people chose to drive rather than fly. Even more profound damage was done to American values and economic health by our societal, rather than just individual, perception gap.

Ropeik is not optimistic that we can largely avoid such responses, due to innate human traits that underlie the affective aspects of our risk response. However, he argues that better risk communication by our leaders and commentators could adjust the balance between rational and affective responses. We suggest that many negative repercussions from 9/11 could have been mitigated—however imperfectly—had we individually and collectively behaved differently in the aftermath of 9/11, trying to take rational, conscious responsibility for our behavior. Journalists, educators, bloggers, politicians, and other opinion leaders have a responsibility to avoid feeding terrorist fears and to promote rational evaluation of our national priorities. In particular, the community of skeptics is especially knowledgeable about the battle between objectivity and irrationality and has special expertise and opportunities to try to close the perception gap concerning terrorism.

About once in a generation, a major "game changing" event occurs: the economic crash of 1929, Pearl Harbor, the launch of Sputnik, and now 9/11. Each of these events has spawned dramatic changes in how we live—some good, some bad, some equivocal. The Great Depression led to "New Deal" social programs, including Social Security; Pearl Harbor and World War II and the Cold War that followed led to the massive growth of the "military-industrial complex" of which Eisenhower famously warned us; and Sputnik launched the space program, along with major reforms of the U.S. education system and increased appreciation of science and technology, arguably leading to the revolution in electronics and computers. What is the legacy of 9/11? Sadly, it is a wasteland of fear and hate, expensive professional armies fighting endless wars, and a brand new bureaucracy of Homeland Security (including the TSA), which promotes its own continued existence and is unlikely to go away.

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Clark R. Chapman is a research scientist at the Southwest Research Institute in Boulder, Colorado.

Alan W. Harris is a research scientist, most recently at the Space Science Institute (also in Boulder, Colorado). They developed their perspectives on hazards from researching what is perhaps the lowest probability but highest consequence hazard of all: the potential end of human civilization due to the impact of an asteroid or comet.

‘Exeter Incident’ Solved!

A Classic UFO Case, Forty-Five Years ‘Cold’

One of the great unsolved UFO cases—which provoked endless controversy between True Believers and Doubting Thomases—has at long last succumbed to investigation. The 1965 Exeter mystery is now explained.

JAMES MCGAHA and JOE NICKELL

It has been considered “one of the best-documented UFO accounts on record” (*APRO Bulletin* 1965) and “one of the most spectacular and best-corroborated UFO close encounters of all time” (Davenport and Geremia 2001). What journalist John G. Fuller would subsequently relate in his book *Incident at Exeter* (1966) began in the early hours of a September morning in 1965 near a small town in southeastern New Hampshire. It has never been satisfactorily explained—until now.

Exeter Incident

The story begins at 12:30 AM on September 3, 1965, at Exeter, New Hampshire. A policeman cruising on Route 101 came upon a woman parked beside the road. She told him excitedly that a flying object with red flashing lights had chased her for some distance. She pointed to a bright light on the horizon. The policeman, Eugene Bertrand, watched it for a short time and, unimpressed, left after reassuring the woman there was nothing to worry about.

Then at 2:24 AM, eighteen-year-old Norman Muscarello burst into the Exeter police station, “white, and shaking.” He had been hitchhiking along Route 150 toward his home in Exeter when he saw what he called “the Thing,” as big as or bigger than a house (Fuller 1966, 11). As Muscarello (1965) later described it in a signed statement:

> A group of five bright lights appeared over a house about a hundred feet from where I was standing. The lights were in a line at about a sixty-degree angle. They were so bright, they lighted up the area. The lights then moved out over a large field and acted at times like a floating leaf. They would go down behind the trees, behind a house and then reappear.

Muscarello then described what would prove to be a powerful clue to the UFO’s identity:

> [The lights] always moved in the same sixty-degree angle. Only one light would be on at a time. They were pulsating: one, two, three, four, five, four, three, two, one. They were so bright I could not distinguish a form to the object. I watched these lights for about fifteen minutes and they finally disappeared behind some trees and seemed to go into a field. At one time while I was watching them, they seemed to come so close I jumped into a ditch to keep from being hit.

Bertrand drove with Muscarello to the site just before 3 AM. The two walked into the field, and Bertrand himself witnessed the lights Muscarello had described. He stated, “At one time they came so close I fell to the ground and started to draw my gun.” The officer stated that there were “five bright red lights”; indeed they were “extremely bright and flashed on one at a time.” He added that “The lights were so bright, I was unable to make out any form” (Bertrand 1965). The pair ran to the police car. Bertrand radioed Patrolman David Hunt, who arrived and also witnessed the lights, which finally moved away, eastward, toward the ocean (Fuller 1966, 14).

Over the next several weeks, some sixty reports of UFOs followed in the area around Exeter. The case resulted in an article in *Look* magazine (February 8, 1966), the book by Fuller (expansively subtitled *The Story of Unidentified Objects over America Today*), and a host of articles, entries in UFO encyclopedias (e.g., Clark 1998, 364–67), and discussions in books (e.g., Hynek 1977, 154–66), as well as lectures, radio shows, and television documentaries.

J. Allen Hynek—the astronomer who began as an admitted “outright ‘debunker’” but became, by the late 1960s, a true believer in the reality of “the UFO phenomenon”—considered the case “a fine example of a Close Encounter of the First Kind” (1977, 1, 154), terminology he created. Hynek observed that the Pentagon was unable to explain the September 3, 1965, Exeter phenomenon and that “the scientific establishment” (a phrase dear to true believers) “in failing to deal with the evidence” was, like the Pentagon, “actually admitting that it has no explanation” (Hynek 1977, 165–66).

In short, the object was still an *unidentified* flying object, implying that the mystery indicated something momentous. Skeptics were, of course, skeptical.

'Solutions'

Not surprisingly, the Exeter incident provoked many speculations as to what the UFO might have been. Here are some of the proposals:

Astronomical bodies. As shown by a folder in the files of Project Blue Book (the U.S. Air Force's UFO evaluation operation, 1952–1969), the Pentagon considered—and rejected—the possibility of "astro-stars/planets." Supposedly, the witnesses had merely seen "stars and planets twinkling" due to a temperature inversion (a meteorological phenomenon in which a layer of warm air is trapped above cold night air and thus is capable of causing visual distortions) (Clark 1998, 365). The totality of evidence was incompatible with that hypothesis, leading Hynek (1977, 154) to declare, "The astronomical evaluation is completely untenable."

Glare of airport landing lights. One air force officer hypothesized that the Exeter sighting merely resulted from the glare of landing lights at nearby Pease Air Force Base, a Strategic Air Command (SAC)/North American Air Defense Command (NORAD) bomber base. This possibility was tested by having both the runway marker lights and the approach strobes turned off and on during a fifteen-minute period, but observers saw no effect from the Exeter site (*UFO Phenomenon* 1987, 103–104).

An Air Force Operation. Blue Book suggested the incident might have been caused by planes from a SAC/NORAD training exercise dubbed "Big Blast," which occurred on September 2–3, 1965. Blue Book noted that "the town of Exeter is within the traffic pattern utilized by Air Traffic Control in the recovery of these aircraft at Pease AFB [Air Force Base], N.H." The exercise was active—according to Blue Book's chief (Quintanilla 1965)—between midnight and 2 AM. However, Bertrand noted that he and young Muscarello had witnessed the flashing UFO "nearly an hour after two a.m. which would eliminate the Air Force Operation Big Blast" as an explanation (qtd. in Clark 1998, 366). Hynek (1977, 154) concurred.

Advertising plane. Newspapers in the Exeter area ascribed the lights to "a flying billboard"—an ad plane—owned by the Sky-Lite Aerial Advertising Agency of Boston. The *Amesbury* (Massachusetts) *News* thus claimed the UFO "has finally been identified!" But alas, that plane was on the ground between August 21 and September 10, and furthermore it bore no red flashing lights, instead having "a rectangular sign carrying white flashing lights" (Fuller 1966, 51).

Corona discharge from power lines. The late UFO skeptic Philip J. Klass agreed that the eyewitnesses had indeed seen something unusual, but he speculated that "the Exeter UFOs" (including the one seen by Muscarello and the two police officers) might have been "power-line coronas," that is, clear-weather plasmas (luminous clouds of ionized air) that were generated by electrical charges emanating from high-tension power lines (Klass 1968, 12–25). This clearly did not explain the original Exeter incident, and Klass later backed away from his "plasma UFOs" theory (see Clark 1998, 366).

Prank with lighted kite. Skeptical UFO buff Martin Kottmeyer (1996) weighed in with the notion that a prankster flew a kite, most likely "a large box kite" with "five strobe flashers linked to a sequencer" that "hung along the kite-line rather than a tail" (thus accounting for the observed sixty-degree angle). However, not only is the kite hypothesis cut from whole cloth, but the imagined prankster seems to have gone to considerable effort for such a deserted place and time.

Figure 1. A U.S. Air Force KC-97 refueling tanker like this one became an unintentional UFO, sparking the "Exeter Incident" of September 3, 1965.

Figure 2. On the underbelly of the KC-97 are (closest to the camera) a set of three high-intensity lights and (farther from the viewer) the five red panels of sequencing lights. (These were described by eyewitnesses as "five bright red lights" that "flashed on one at a time," specifically "pulsating: one, two, three, four, five, four, three, two, one.")

Other objects. Still other possible candidates were proposed—helicopter, balloon, civilian plane—but nothing seemed likely.

As Jerome Clark summed up in his *The UFO Encyclopedia* (1998, 366) after noting the case had received much notoriety, "The attention ensured that this particular close encounter of the first kind would be remembered in a way few have been. Still, by any standard the sighting remains puzzling and impressive."

Perceptions

People misperceive—especially when they suddenly encounter something that is unknown, is seen under adverse conditions, and frightens them. Recall that at Exeter the unidentified lights were so bright that witnesses could not make out the shape of the UFO. Not knowing the craft's size, its altitude, or its distance from the viewer—that is, with multiple unknowns—a witness has no basis for estimating any of these factors. And Exeter witnesses were indeed afraid: a woman who felt she was being chased by a UFO had pulled off the road; a teenage witness arriving at the police station was white and shaking; and one officer admitted he almost shot at the bright lights.

Consider that even something as distant as a meteor hundreds of miles away, passing out of sight behind trees, can seem to have landed in a nearby woodland—a common illusion. The brightness of the Exeter UFO's lights (greater than that of a mere airplane and ultimately providing a clue to its identity) probably made the craft seem much closer than it really was.

Consider, too, that something that is frightening tends to loom large in one's consciousness. Chad Marsolek of the University of Minnesota, an expert in memory distortion, describes a "weapon-focus effect." This may cause an eyewitness who is focusing on something frightening (such as the barrel of a gun) to lose focus on other elements. As it happens, when people view a disturbing image they tend to be confident of their accuracy—even when their memory is wrong (Marsolek 2010).

All of these issues apply to the Exeter incident. However, much of what the eyewitnesses described was still accurate, as we shall see presently.

Solved!

For forty-five years the incident at Exeter remained unsolved. Then, while we were working together on some ongoing UFO research, one of us (Joe Nickell), an investigator and science writer, recalled the cold case to the other (James McGaha), an astronomer and former military pilot. We brainstormed the case, shared sources, and discussed details—soon agreeing that one particular element held the key to the solution. We might call it (with homage to Hardy Boys' mysteries) "The Clue of the Sequencing Lights."

As it happens, the military pilot of our team has actually docked with a craft like the UFO at Exeter, and he recognized the sequencing lights for what they surely were: those on a U.S. Air Force KC-97 refueling plane. To check his memory and obtain photos (figures 1–3), he visited an aerospace museum. Like seeing an old friend, he gazed on a mothballed KC-97 tanker (figure 1) whose fuselage is arrayed with a row of five red sequencing lights (figure 2). These would reflect onto the refueling boom (figure 3), which (according to the flight manual) when lowered is inclined at sixty-four degrees.

Just this type of craft operated out of Strategic Air Command bomber bases like that of Pease AFB and, indeed, would surely have been involved in a SAC/NORAD training exercise like that dubbed "Big Blast" of September 2–3, 1965. But what about the "fact" that this exercise—which was ongoing in the skies over Exeter at the time of the first sightings—had supposedly ended about an hour before Muscarello and officer Bertrand had their "close encounter"?[1] It seems quite apparent that, although the particular exercise was reportedly over, there were still planes in the sky. Bertrand and Hunt, in fact, witnessed a B-47 jet at about the time the UFO disappeared (Fuller 1966, 67). Perhaps it had just refueled.

The airborne refueling process of the KC-97 is both interesting and relevant. Briefly, it involved the KC-97 making long circuits of the rendezvous area. As the jet to be refueled began to approach, the boom was lowered and the receiver (sequencing) lights were turned on. However, when the jet was in very close proximity, the receiver lights were turned low; otherwise their extreme brightness would temporarily

blind the approaching pilot. (The sequencing stopped as the aircraft hooked up.) There would be some jockeying as the two planes connected, and all of this could look exceedingly strange to an observer on the ground.

Thus, on one of its long passes the slow-moving KC-97 could have seemed to be "chasing" the first eyewitness on Route 101. It was subsequently seen by young Muscarello and, later still, Bertrand, with its boom down at its characteristic angle. This boom, which bore its own small wings (again, see figure 3), would actually flutter in the air currents (except when specifically being controlled by the boom operator), which no doubt explains eyewitness Muscarello's statement that the UFO "acted at times like a floating leaf." Most notable were the tanker's five red lights, which were flashing—in the sequence accurately described by the two witnesses—one, two, three, four, five, four, three, two, one. The extreme brightness of the lights, rendering other features of the object indistinguishable from the ground, is further corroborative evidence of the UFO's identification as a KC-97 refueling plane.

Why did the Pentagon not solve the case at the time? Perhaps in the welter of paperwork the clue we found so significant went unseen by anyone who could fully grasp its import and who had time to devote to the case. Naturally, everything is much clearer in hindsight.

We believe this solves the so-called incident at Exeter. As to the weeks of subsequent UFO reports in the vicinity, they were beyond the scope of our investigation. (See Fuller 1966; Sheaffer 1986, 111–19.) As our work shows, "cold cases" may be solvable with perseverance and some luck, keeping in mind that luck is most likely to come to those who go looking for it.

Acknowledgments

The authors wish to thank James Stemm, curator of the Pima Air and Space Museum, and Tim Binga, director of the Center for Inquiry Libraries, for their help with this investigative project.

Figure 3. Underneath the KC-97 is also a refueling boom (shown here in stowed position). When down, the boom is at an angle consistent with the sixty degrees an eyewitness reported (specifically sixty-four degrees, according to the flight manual). The sequencing lights would reflect onto the boom, which would flutter "like a floating leaf" when not controlled by the boom operator (note its small wings). (Photos by James McGaha)

Note

1. Hynek (1977, 154) misstated the situation when he wrote that "Operation Big Blast terminated more than an hour before the incident at Exeter began." He should have said that the operation was in progress during the earlier sightings but had reportedly ended about an hour before Bertrand (1965) witnessed the UFO.

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James McGaha, major, USAF retired, is a former special operations and electronic warfare pilot and now an astronomer and director of the Grasslands Observatory in Tucson, Arizona. He has frequently appeared as a UFO expert on such television shows as *Larry King Live*. He is a Committee for Skeptical Inquiry scientific consultant.

Joe Nickell, PhD, is a skeptical investigator and UFOlogist who has written extensively about extraterrestrial visitations in his various books, including *Entities* and *Tracking the Man-Beasts*. He contributed to *The Encyclopedia of Extraterrestrial Encounters* and coedited *The UFO Invasion*.

‘Getting People to Think More Deeply’

An Interview with *Miracle Detectives* Scientist Indre Viskontas

Miracle Detectives is a new television series that examines miracle claims via a team of investigators—one a believer, the other a scientist. The show premiered with the launch of the Oprah Winfrey Network (OWN) in January 2011.

The believer of the show’s team is Randall Sullivan, journalist and author of the book *The Miracle Detective* (Grove Press, 2005). Sullivan reportedly experienced his own personal religious event in Medjugorje, Bosnia. He is an avowed believer in the existence of miracles.

The adept foil for Sullivan is neuroscientist **Indre Viskontas**. Broadly trained in psychology, specifically in cognition, at UCLA, Viskontas specializes in the neural basis of memory and creativity. She is affiliated with the University of California, San Francisco, Memory and Aging Center and edits the journal *Neurocase.* (She is also an accomplished opera singer, having obtained a master of music degree at the San Francisco Conservatory of Music.)

At least two miraculous claims are highlighted in each episode. The miracle detective team of Sullivan and Viskontas (a setup akin to Mulder and Scully in *The X-Files*) travels to the location of the event to interview witnesses and also consult with various experts.

Questioning witnesses who believe a miracle has taken place is as much of an art as a science. Viskontas employs both to examine the claims made by people who believe these events are miraculous communications from God. In this interview, she shares with **Sharon Hill** strategies and some insights into working in television.

In the show’s introduction, you say, “Some would call me a ‘skeptic.’” Do you identify as a skeptic?

Would I call myself a card-carrying skeptic? No. I didn’t know of the whole skeptical community until I started doing research for the show. I hadn’t been involved in it previously, so for me to say “Yeah, I’m a skeptic too” seemed disingenuous. I know what it means to be a scientist because that’s what I’ve been trained to be. I don’t have a good sense of what it means to be a “skeptic.”

What is the scientist’s role on the show?

My goal is to get people to think more deeply about what they believe without threat or disrespect. The target audience is not exactly on “my side,” and so I have to walk a very fine line.

When I talk to people, I try to assess whether their stories are backed up by other evidence. I realize people are very susceptible to all kinds of memory failures. Misremembering things that happened, while at the same time conflating memories from similar but separate events, is very common. Of course, most of us are not very good at resisting the temptation to infer causality when two events follow each other closely in time.

What’s it like to do an episode and a whole season?

The shooting schedule was grueling. It was a twelve-hour day on camera. We’d shoot for twelve hours and then return to the hotel room, where I’d still have to do a diary cam session (talking about your feelings into the camera) and research for the following day.

Also, I’d be preparing for the next week’s case at the same time, so if I got six hours of sleep a night that was great. It was nonstop. I would do so much background research on each case, downloading and reading papers from PubMed, calling up colleagues, talking about the case with my husband, and so on.

For the interviews [with experts and witnesses], I didn’t always have enough preparation time, and sometimes I didn’t know what to expect. That’s part of the challenge on a show like this.

How do you go about interviewing witnesses who have a story about a miracle? How do you use that information?

I look to question witnesses in a way that gets around them just telling the story in the same way they’ve told it before. Instead, we try to access other information they might not share in the regular telling. They might have told this story a

hundred times before. When you start to ask them questions about the event—things they aren't used to talking about, other aspects they aren't used to recalling—you can find out if what they are saying makes sense or if they are conflating multiple incidents or coloring the past with their knowledge of what happened after the incident.

I assume that people are telling me honestly what they remember, but when there is something out of the ordinary [such as an event they may attribute to paranormal causes] there are other ways in which I can corroborate their story. For example, I can look at a police report and at specific details of the account. Then I can get a sense of how accurate a memory is and to what extent the person's recollection is faulty.

How does editing for television affect the presentation of the investigation? Have you been pleased with the editing?

For the most part I've been pleased. When you have a television show, you need to make a story out of [the content]. There was one episode about a medical intuitive where I felt that . . . [the editors] left out some critical components. We picked a subject with one salient complaint. The intuitive came back with a very long list of potential problems but no mention of that complaint. Many items mentioned on that list were cut out to save time, and the editors decided to keep the relevant bits in—that is, the ones that the subject felt actually did apply to him. They edited out stuff that seemed superfluous. But in the case of an intuitive, this is really problematic! When listing every possible symptom that a person could experience, you're going to get some hits, but what's important is the ratio of hits to misses—not simply the hits.

The editing is not designed to show that the skeptic is wrong and Randall is right. The goal is to make good television. Especially given the target audience, [the editors] do a

"My goal is to get people to think more deeply about what they believe without threat or disrespect. The target audience is not exactly on 'my side,' and so I have to walk a very fine line."

> "When you ask people questions that force them to come up with answers, they are much more likely to change their belief system if they realize these questions are unanswerable within their viewpoint."

good job. If I felt they were really skewing it, I would have left the show midway. But we have to remember that the target audience won't watch a show debunking miracles, and what's important here is to engage that audience, not simply to preach to the choir.

Is it hard to explain the science in a one-hour show?

It's very hard; it's one of the biggest challenges. What I say is, "The evidence suggests it's most likely this thing over the other." That's not very satisfying to many people but *it's the truth*. To say that God did that or it was some supernatural thing requires such a mountain of evidence.

What has been the viewer reaction?

The feedback has been mixed. I get emails from people who say they like my point of view. They'll say, "Most of the time I find myself siding with Randall, but you've made me think about things that I hadn't before." Other times they'll say, "Wow, I never really thought about that possibility. It's changing the way I think about my relationship with God because maybe he acts in ways I never considered before."

It can also be hard to hear the criticisms from the skeptical community, such as "You weren't hard enough on him!" In some cases they're right; there were better ways to do it. But I did the best I could, since one of my goals was to engage the audience, not be dismissed outright by them. I think in most cases I did a pretty good job of bringing things to the table that people hadn't thought about.

To me, it's not exciting to say, "This is not a miracle." It's exciting to say, "There is something here we hadn't thought about before that's worth investigating further," or "Look how interesting the brain is that it can do this." That's what fascinates me.

How do you think skeptical/rational advocates can successfully promote their viewpoint?

I'd say don't simply discount a person's belief but find what it is that interests you both. For example, a Bigfoot print: Instead of dismissing it by stating that's not what you think it is, bring up another discussion point. Find something interesting [to discuss] that doesn't rely on the existence of a mythical creature or supernatural explanation. Perhaps you can find something in common that you can start out with: "Isn't it odd that there is one footprint here and nothing else around it? How do you think it got there? What are possible explanations? Let's explore and keep talking." Once you dismiss them, you've lost them. They don't want to talk to you anymore.

When you ask people questions that force them to come up with answers, they are much more likely to change their belief system if they realize these questions are unanswerable within their viewpoint.

They also *want* to talk about the experience. So, if you question and try to understand what they base their beliefs on, you can lead them in a direction to show them that their beliefs might be fiction, and you can also develop a rapport with them that will encourage them to trust you.

What are your future plans?

My goal in the future, through this show or other means, is to share my passion for life and to illuminate what I can about the human experience. Just as physicist Richard Feynman has observed, we can enjoy beauty at all levels of observation, from the microscopic to the abstract. Knowledge doesn't take away; it only adds.

Sharon Hill is a geologist who specializes in policy, regulation, and public understanding of science. She blogs at http://idoubtit.wordpress.com about exposing sciencey-sounding claims.

Expanded topics discussed in this interview can be found online at www.webcitation.org/60fxts305. The full text of the interview can be found at: **www.csicop.org/SIExtras.**

[INVESTIGATIVE FILES JOE NICKELL

Joe Nickell is CSI's senior research fellow. He has been investigating alleged psychical phenomena since 1969 and is the author (or coauthor or editor) of thirty books.

Psychic Connections: Investigating in Hungary

While in Hungary from September 16–22, 2010—initially to participate in the fourteenth European Skeptics Congress (held in Budapest September 17–19)—I found time for some interesting investigations.

Massimo Polidoro and I explored the great labyrinth beneath Buda Castle, a network of caves and rock vaults created by hot water springs and used as refuge by prehistoric man; it was later linked by cellars, dungeons, and military store rooms into a complex that runs for 1,300 yards (*Eyewitness* 2007, 65) and is billed as "one of the seven underground wonders of the world" ("The Labyrinth" n.d.). Polidoro and I also went in search of a fabled statue of the Virgin. Legend says it was enclosed in the wall of Mátyás Church during the Turkish occupation, and when the edifice was all but destroyed in 1686, the statue miraculously appeared (*Eyewitness* 2007, 62). Alas, however, it would not reappear for us: it was in a part of the church undergoing renovation, and we could not beg or buy our way in.

Another investigation had me accompanying scholar Benedek Lang to the Library of the Hungarian Academy of Sciences to assist him in studying a most mysterious manuscript, the Rohonc Codex. This—like the famed Voynich Manuscript (Schmeh 2011)—is written in an unknown language. Using techniques from my book *Pen, Ink, and Evidence* (Nickell 1990), I provided information relating to the codex's authenticity, date of composition, and other issues. Still another excursion took me to the purported birthplace of Harry Houdini at No. 1 Csengery Street, District 7, Budapest.

The remainder of my investigative work in Hungary—which relates more or less to the field of parapsychology—was conducted with the untiring assistance of Gabor Hrasko (who negotiated arrangements, drove, took photographs, and much more), and Veron Eles (who has a definite talent for undercover work). Here is a very brief account of each of four excursions.

Experiencing Healing Energy

Our first visit was to a site called Attila Domb (Attila Mound), part of a commercialized Kincsem Horse Park near the village of Tápiószentmárton. The site's supposed connection with Attila the Hun is tenuous, but the name Kincsem ("My Treasure") was that of a "wonder mare" of the nineteenth century who never lost a race. The 37.5-acre site was said to have an energy emanation that attracted horses and endowed them with better health and a greater foaling rate than elsewhere. A "seriously ill" horse was reportedly also healed there ("Attila" 2011; Olsen 2007, 128–29). From this folklore grew rumors that the site was a "healing mound" that could cure sick people.

The owner (and local mayor), Kocsi János, graciously hosted us and gave us a demonstration of the site's supposed magical energy. He sat Eles and me down in his on-site restaurant and *suggested* that our hands, placed flat on a table, would mysteriously rise and a warmth or tingling or other effect would spread from our fingers throughout our bodies. Eles followed my lead as I played along, and she did so again when János took us just outside and *suggested* the energy could cause us to fall backward—much the same as at an American Pentecostal healing service where people supposedly "go under the power" of the Holy Spirit but actually

Figure 1. Village mayor prepares to catch the author, who seems under the power of a mystical energy.

are role-playing in response to suggestion and expectation (Nickell 2002). János played catcher as we fell backward on cue (see figure 1).

Hrasko, Eles, and I then walked to the mound, a gentle knoll where "geomancers," or dowsers claim to detect the crossing of "a strong ley line"—leys are imagined lines of "earth energy" that supposedly connect ancient mounds, churches, legendary trees, and other alleged mystical "power" sites (Tietze 2004, 12; Olsen 2007; Guiley 1991, 329–30; Nickell 2003). This mix of superstition and pseudoscience will have no medical benefit of course, although the site can take advantage of the same factors that are behind the touted successes of faith healing: misdiagnosis, prior medical treatment, psychosomatic conditions, spontaneous remissions, the

Figure 2. An operator connects hopeful callers with work-at-home telephone "psychics."

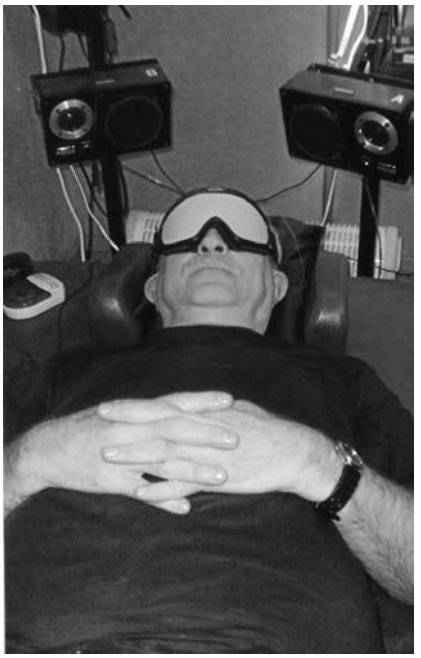

Figure 3. The author serves as the subject of a ganzfeld demonstration—an experiment in telepathy—in a "psi" laboratory.

placebo effect, and so on. As always, believers emphasize any supposed successes while ignoring the numerous failures.

Across the top of the mound is a ditch where an archaeological dig took place in 1924 in a search for traces of Attila the Hun's wooden palace. (His grave is also located at the site, according to legend.) Nothing was discovered relating to Attila, but of several unearthed objects, one, attributed to the Scythians and now reposing in Hungary's National Museum, is descriptively called the Golden Stag. Its namesake is János's restaurant, and the wonderful lunch to which he treated us there—beginning with *palinka* (an alcoholic peach drink) and including Kincsem ragout (a stew named for the famous racehorse) along with many other treats—was the most magical part of our visit.

Hanging Up on Phone Psychics

We three investigators next met with Jeno Torocsik, a Hungarian mathematician who operates a number of interactive television shows. These include game shows that, critics complain, are essentially gambling enterprises (since they depend more on chance—the winning caller being picked randomly—than skill) ("TV" 2006). Torocsik also operates several psychic telephone networks—in Spain, Romania, and the United States, as well as Hungary. (Do the psychics know who will win on the game shows? Apparently not.)

We skeptics had a debate with Torocsik over the evidence for and against psychics and psychic phenomena. He was opposed to his "psychics" being tested by famed magician and psychical investigator James Randi, whose James Randi Educational Foundation (JREF) offers one million dollars to anyone who can, under scientific test conditions, demonstrate genuine psychic ability. Torocsik asserted that Randi is not impartial (when in fact JREF protocols eliminate tester bias), and he claimed that "psi" (psychical phenomena) is too elusive to be tested effectively! When I attempted to make the case for the necessity of scientific testing, pointing out that it was he who appeared not to be impartial, he became rather impatient.

Nevertheless, he did permit me to photograph an operator who handles psychic-seeking callers (figure 2). Using a computer screen, she matches callers with at-home fortunetellers who, he insisted defensively, were at least effective counselors, if not actually psychic. (In a SKEPTICAL INQUIRER exposé of telephone psychics, C. Eugene Emery, Jr. [1995] describes how some admittedly phony psychics attempted to gently provide traditional counseling as a substitute for supernatural insights. But callers resisted. For example, one woman wondered if her husband was going to beat her but rejected the advice to call 911 or turn to available sources of assistance. Indeed, only after the "psychic" concocted a tarot-card reading to support her commonsense recommendation did the caller seem inclined to accept the advice.)

Tapping My Telepathic Powers

I was much intrigued by our visit to Budapest's Esoteric University and its Psi Lab, where researcher Paulinyi Tamás gave us an overview of the experiments he and his colleagues are conducting. They gave a demonstration (not an actual experiment of record) using me as a test subject for a ganzfeld experiment. This involves parapsychologists creating an environment of sensory deprivation to supposedly stimulate the subject's receptivity of ESP (Guiley 1991, 225–26). This particular laboratory has claimed quite significant results, in contrast to others that have reportedly gotten only average or low scores.

For the experiment, a random number generator was used to select one of a set of four pictures. I was then subjected to mild sensory deprivation (involving diffuse light and white noise) in a soundproofed test room (figure 3) where Tamás joined me. Unknown to me, Eles was chosen as "sender"—that is, one tasked with looking at the target picture and attempting to convey it to me telepathically.

On request, I made verbal descriptions and later a sketch of what I had envisioned in my mind's eye, then was

shown the four pictures and asked to pick the one best matching my impressions. As it happened, my selection was the one Eles had "sent." This was only a one-in-four guess, but everyone was amused—both at the outcome and at my pretense of having discovered I was actually telepathic.

Joking aside, I had some criticisms to share, and the parapsychologists listened earnestly. I thought the person who monitors the experiment by sitting in the room and interacting with the test subject should not have seen (or actually been familiar with) all of the two hundred or so photos used in the series of ganzfeld experiments. And I wondered why the researchers did not attempt to further test those subjects who scored consistently well (or poorly, for that matter), to see if their results might represent only a statistical fluke or could have some other explanation.

(This entire subject is complicated and deserves a more detailed description and analysis than I am able to provide here. Those who are further interested should read the critiques of ganzfeld and other psi experiments by CSI's Ray Hyman [1996; 2008], who is professor emeritus of psychology at the University of Oregon and an expert in cognition, the psychology of deception, and the evidence for paranormal claims, including parapsychological ones.)

Wondering at the Gypsy's Trance

The most sensational of our investigative adventures was surely our encounter with a "gypsy" (Roma) fortuneteller and medium at her apartment in Budapest. She wore a colorful scarf and treated us to music from Radio C, the local Roma channel, while I idly looked at her well-worn deck of fortune-telling cards. For an unstated fee (more about that later) she offered to enter into a trance in order to get some important advice that Eles was seeking from the spirit of her deceased twin.

Eles had invented the dead twin in a conversation with me on the way to the medium's apartment. Her original imaginary creation was female; however, when the Roma woman (who does soothsaying weekly on Radio C) began to fish for information and asked if the twin had been male, Eles decided to go with that. She also agreed with other gleanings by the medium that culminated in the tale of the brother having died in a car accident caused by his own drunkenness. Eles played her role admirably, and the medium swallowed the bait, hook and all.

As the medium prepared to communicate with the alleged twin, she warned us not to be afraid if she should fail to emerge from her trance state but simply try to revive her by calling her name and having some water ready. I took the warning as an indication that the woman was going to put on a good show, and I was not disappointed. She knelt to pray, then sat in a chair where she embarked on her voyage to the Other Side (figure 4).

Suitably "entranced," she was soon spinning a "message" from the nonexistent twin to Eles, who seemed obviously moved by the heartfelt outpourings. At length, the alleged communication over, Eles dutifully attempted to revive the medium, who appeared to be immersed in her role, eventually coming to with great histrionics, including a bout of sobbing. After she had finally calmed down, I asked her about her gifts, and she told us that her maternal grandmother had also been clairvoyant. We were not quite prepared for what would soon be the most elaborate act of all: her attempt to wrest from us a whopping fee.

She apparently thought—wrongly again—that we were wealthy *gorgios* (non-gypsies) who would cough up a lot of cash. Not a speaker of Hungarian, I left it to Hrasko and Eles to conduct the negotiations, which I could see were filled with reasoned if angry discourse from our side and more anger, bluster, and histrionics from the Roma woman. I had thought at one point we might throw down some cash and walk out, but I did not know that—surreptitiously following our entry into her apartment—she had locked us in! What a gal! Still, I will not use the term "attempted extortion." Maybe she just did not want us to be disturbed. In time, for a fee of about fifty U.S. dollars—excessive, considering the mediumistic communication was at best a work of imagination—we were on our way, and the Roma woman was all smiles. We were smiling too, from our different perspective. ■

Figure 4. Gypsy fortuneteller and medium is about to return from the Other Side. (Photographs by Joe Nickell)

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Massimo Polidoro is an investigator of the paranormal, lecturer, and cofounder and head of CICAP, the Italian skeptics group. His website is at www.massimopolidoro.com.

The Lost Girl

Investigating a Case of "Psychic Detection"

In September 2005, the Italian media was flooded with news about a psychic, Maria Rosa Busi, who apparently led the police to the body of a missing girl at the bottom of Lake Como. Television and newspapers gave ample coverage to the psychic, who claimed that an otherworldly vision allowed her to unravel the three-year-old mystery. She said she had been able to "see" the last moments of Chiara Bariffi's life before she drove into the lake in her car in late 2002. She even claimed to have heard a message from the deceased woman. "I went to the lake, and I saw where it happened.... I heard her, I saw her and I drew a map," Busi said. "Nobody thought she was in the lake."

The psychic, who claims clairvoyant powers, was first contacted by the parents of the victim, who were trying to find out what happened to their daughter. They sent Busi a photograph of Bariffi, who was around thirty years old when she disappeared. "When I saw the photo, I knew that she was dead," Busi said. "I'm a clairvoyant. I can tell when someone is living or dead."

Police had no leads, and the missing persons case languished. Murder was a possibility and, since Bariffi had also battled emotional problems, some suspected suicide. The family even thought that Bariffi might have gone to Venice or left the country for Spain.

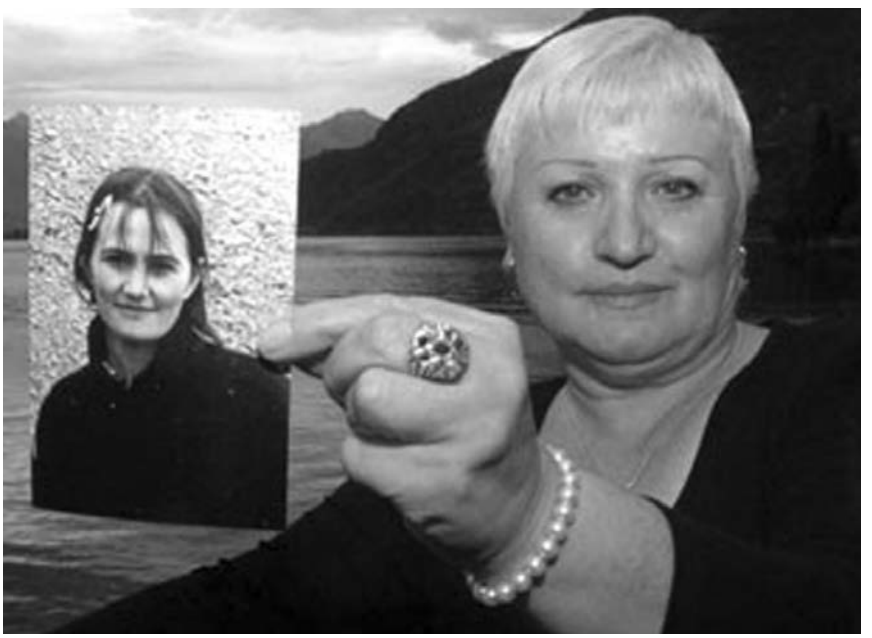
Remo Bonetti, a rescue worker who has led similar searches for bodies in the past, said that the mystery would not have been solved without Busi's help. "Without the directions of Maria Rosa no one would have ever been able to find her, unless by accident," he said.

How "Psychic" Is the Seer?

This is how the case was first presented in the media: A girl went missing. Police searched, but three years passed by and no trace of her was ever found. Then a psychic came along who through magic visions saw and heard the girl calling from the depths of the lake, where rescue workers finally found her. A miracle!

That is, until we looked deeper into the case. Along with CICAP's colleague Marco Morocutti we decided to investigate. First, we retrieved press news clippings and articles relating to Busi. We found that she had also claimed success two years before, after finding the body of a woman who committed suicide in the Lake of Iseo. However, in her statements she forgot to mention that the husband of the woman had also committed suicide, and his body had been retrieved from the waters of that lake just before the woman's suicide. Also, the police had found the couple's car, a purse with personal documents belonging to the missing woman, and her cell phone by the same lake. Furthermore, before disappearing the woman had recorded a tape in which she expressed her intention to take her life. The fact that her body was found in the lake not far from where her husband was found does not seem as impressive once the background circumstances are known.

Busi had also been in the news for claiming that the legendary "gold of Dongo," the supposed treasure of Mussolini, was buried in the Vittoriale, the museum that was once the house of celebrated poet and Mussolini supporter Gabriele D'Annunzio. Several holes were dug in the park, but no treasure was ever found. "The treasure is there, I say. They just did not look hard enough," the psychic still claimed.



Self-proclaimed psychic Maria Rosa Busi holds up a photograph of Chiara Bariffi. Busi claims she knew Bariffi was dead as soon as she looked at the photo.

What Really Happened at the Lake

Now that the record of the claimed psychic was a little bit clearer, it was time to learn what happened at the time of Bariffi's disappearance. On the night of November 30 and early morning of December 1, 2002, Bariffi was driving back home from an evening with friends. The drive was less three miles, but part of the trip was along the edge of Lake Como. That night, the weather bulletins tell us, a violent storm passed over the area. It was so strong that it created landslides on surrounding hills. Bariffi would never reach home that night; both she and her car vanished.

Her disappearance was not so surprising once we knew a little more about the circumstances surrounding it. Both Bariffi's family and the police supposed that the most likely explanation was that Bariffi's car crashed through the railings and plunged into the water below. There was in particular a very dangerous and sharp bend in the road overlooking the lake where, in the past, other cars had broken through and fallen into the lake. Marco Morocutti went to Como and saw three tombstones along the road: a grim reminder to drivers of how risky that bend can be. He also talked to residents who explained that there was road work being conducted at the time of the disappearance and that sand was piled up along the railings—a situation that, coupled with a slippery road and visibility made poor by the storm, was clearly a recipe for disaster.

The waters below that particular bend were the first place the police went searching. The only problem was that the lake in that very spot is approximately seven hundred feet deep. Another car that had fallen there ten years earlier was never found. Scuba divers went looking anyway, but they had no success.

After a while, the search for Bariffi was interrupted. Bariffi's parents started to imagine that maybe their daughter was not dead after all but had run away without telling anyone. So a journalist friend of Busi suggested to them that they contact the psychic and seek her help. The woman went to Como, learned the whole story, and then took a look at the road. At that moment, either by some "spirit message" or by sheer deductive reasoning, she said that Bariffi had fallen into the lake in the very same spot where the police had searched three years earlier.

Chiara Bariffi is believed to have driven into Lake Como after losing control around this dangerous curve.

Maria Rosa Busi, however, had an advantage over the police. She could count on the generous help of the voluntary rescue group led by Remo Bonetti, a group that had already found 120 lost people, most of them dead. Unlike the police, the group had no time limit and could use all kinds of modern technologies in their search. In particular, they employed "Mercurio," a robot submarine that could reach a depth of 1,600 feet—a faculty that the police lacked.

It was just a matter of time and patience before the cameras of the robot eventually found a car whose license plate matched Bariffi's. The lost girl had been found.

The Media Never Learn

So that's how things really happened at Lake Como. Once we know all the facts, the psychic's feat appears much less impressive than it did in the beginning. Furthermore, as a consequence of the enormous exposure that Maria Rosa Busi gained, she was later contacted regarding other missing persons cases. In 2006 a small boy was kidnapped near Parma, and a month later Busi claimed that she saw him alive and well. After all, she had said that through her clairvoyant power she could "tell when someone is living or dead." It later turned out that the boy had been killed by the kidnappers only a few hours after they took him.

After that, Maria Rosa Busi again gave directions and drew maps that she said would help in finding a canoeist who had disappeared in the Lake of Pusiano. Six years later, the canoeist is still missing.

But it seems that the media never learn. Last January, after the month-long disappearance of Yara Gambirasio, a thirteen-year-old girl who was last seen leaving her school gym, Busi tried a comeback. "I am here because my conscience calls me. I feel I must do something for that poor little girl," she said to journalists. "I feel she will be found; the family should be serene. Love will prevail and all will be well." Two months later, the dead body of Yara was found in a nearby field. The killer is still at large.

[THINKING ABOUT SCIENCE MASSIMO PIGLIUCCI

Massimo Pigliucci is professor of philosophy at the City University of New York—Lehman College, a fellow of the American Association for the Advancement of Science, and author of *Nonsense on Stilts: How to Tell Science from Bunk*. His essays can be found at www.rationallyspeaking.org.

The Hopeless War against Intelligent Design

Those of us who have spent years arguing against creationists of all stripes inevitably begin to think that the struggle is hopeless, at least in one sense: it seems to simply be impossible to persuade any major proponent of the other side that there is something seriously wrong with what he or she is doing. Now, it is tempting to just shrug one's shoulders and mutter something along the lines of "Well, they are a bunch of idiots blindly driven by their ideology," after which we order a beer with our fellow skeptics and further commiserate the sorry state of affairs when it comes to rationality in this world.

Except, of course, that that's a bit too easy. For one thing, you can rest assured that someone on "the other side" is shrugging his shoulders and muttering similar comments in perfect symmetry—though since often proponents of intelligent design (ID) are fundamentalist Christians they probably wouldn't do it over a beer. Yes, of course we are right and they are wrong, but what exactly makes us so sure that the charge of ideological blindness ought to stick to them but not to us?

That is why I found interesting a paper published in the philosophy journal *Sophia* by Jeremy Shearmur titled "Why the 'Hopeless War'? Approaching Intelligent Design" (published online on December 4, 2010). Shearmur wishes to take seriously the fact that the ID movement is not fueled by a bunch of bumbling idiots but by people like UC Berkeley lawyer Phillip Johnson, Princeton Theological Seminary graduate William Dembski, and Lehigh University biochemist Michael Behe. Shearmur is simply trying to see what would happen if one were to take these people at their word, as genuinely trying to build a non-naturalistic alternative to modern science by way of outlining a theory of intelligent design that does a better explanatory job of the history of life than the Darwinian theory of evolution. The question is then, what would ID proponents have to do in order to be taken seriously and avoid being dismissed as simply a bunch of conservative Christian ideologues looking for any excuse to impose their theistic views on the rest of us?

I realize that it is hard to let go of the latter—tempting, and somewhat empirically justified—assumption. But let us try for a moment and see where Shearmur manages to go. First off, Shearmur gives ID proponents credit over their main intellectual rival within the Christian tradition, theological modernism—and rightly so, I think. Shearmur argues that the theological modernist position, which somewhat lackadaisically reconciles science and faith, fails in two major ways: first, because it keeps remaking God into whatever image happens to be compatible with the latest science, i.e., it succeeds through a theological copout; second, because it does so without the intellectual courage to acknowledge its marked retreat from the historical Christian tradition. In other words, Dembski and Co. are theologically braver than their almost-anything-goes mainstream colleagues within Christian apologetics.

Okay, but what about the (alleged) science? Shearmur reconstructs Dembski's approach within the context of a renaissance (so to speak) of Princeton Theological Seminary's "old" school, as developing "a striking line in metaphysics in which he reinterprets ideas about the Word from St. John's gospel into a research program for the understanding of the world." This really doesn't sound like a promising beginning, but Shearmur (who, I should add, is a nonbeliever) valiantly pursues his quest to give ID its best shot.

Dembski's program faces one initial, huge hurdle, though: if he wishes to reestablish modern science in a way that is seriously compatible with the Christian scripture, he needs to account for the problem of error within scripture itself. Shearmur states that Dembski's "unapologetic apologetics" has a range of options available, all the way up to taking seriously W.V.O. Quine's suggestion that each and every thread of the "web of knowledge," including the rules of logic itself, ought to be up for discussion if there is sufficient reason to doubt its accuracy.

Quine was one of the most influential philosophers of the twentieth century, and he did have a major point to make to the effect that there are no sacred cows in science, philosophy, or even logic and math. (According to Quine, if our best understanding of the world is incompatible with some of the laws of logic, so much the worse for the laws of logic.) That said, as Shearmur immediately agrees, going that route would be very dangerous for Dembski and colleagues: "Such an approach can be only defensive—and it is also in principle a strategy open to any view, however silly it might actually be. Its pursuit simply shows that a view can be maintained, not that it is true."

And indeed, in the end Shearmur concludes that that is precisely ID's Achilles' heel. Even if we take the efforts of Johnson, Dembski, and Behe at face value as an intellectually honest pursuit for an alternative type of science, the fact remains that they haven't even begun to do anything beyond (highly questionable in itself) negative critical work. There are no experiments being done by ID proponents; there is no organic research program; there is no detailed theoretical explanation of intelligent design as a process. The question then becomes this: Is such a dearth of progress the result of the newness of modern ID (as compared to, say, William Paley's pre-Darwinian version), or is there an intrinsic reason that a theologically inspired scientific research program is an oxymoron? Shearmur doesn't see why the latter conclusion should hold. I can't imagine any reason why it shouldn't. ■

"Psychic Vibrations" has appeared in the SKEPTICAL INQUIRER for over thirty years. Sheaffer is also author of *UFO Sightings: The Evidence* (Prometheus Books, 1998). He blogs at www.BadUFO.com.

UFO Mothership and Fleet over London

Another implausible video showing UFOs has gone viral, spawning a flurry of news stories by major media outlets. For example, the *Daily Mail* in London asks, "Are aliens getting less camera shy? UFOs filmed above BBC building in London" (http://tinyurl.com/63cactp). The *Huffington Post* reports, "London UFOs: Multiple People Capture Odd Occurrence Over British City" (although not at the same place and time; see http://tinyurl.com/43qfz4r). The video that started it all, posted by a photographer known only as "alymc01," can be seen at www.youtube.com/watch?v=QDIFZwJbF0. We see a lot of seemingly random (and pointless) filming of people on the street. The camera points skyward, and we see some small UFOs and then finally a big one (the "mothership") moving in and out of the clouds.

One has to admit that the video looks pretty cheesy. The big "mothership" looks a bit like a lens flare, but it does not act like a lens flare; its movement is unrelated to that of the camera. At first I thought that the small UFOs were birds, but on closer examination they appear to be generated artifacts. Actually, the video is alymc01's second UFO video. His earlier video (www.youtube.com/watch?v=8nN6mhnD7E0) doesn't look nearly as impressive, so it was largely ignored.

There was a great deal of commentary, but it did not go beyond comments like "this looks like a computer-generated fake." And strictly speaking, that's enough. After all, *the burden of proof is not on the skeptic to show that a video is fake. The burden of proof is on someone who claims it shows unknown crafts to rule out all prosaic explanations.* And since the film was posted anonymously, this makes it all the more dubious. Using the terminology of *Mythbusters*, we already know enough to call this video "busted." But also in the spirit of *Mythbusters*, let's not stop there. Let's see if we can really blow this thing apart.

British UFOlogist Nick Pope isn't buying the video's authenticity (http://tinyurl.com/3j2rloy). That's bad for the video, since Pope, currently on tour to promote the DVD release of the Hollywood space alien movie *Battle: Los Angeles*, buys a lot of dicey things. But apparently this video looks unimpressive even to him. Interestingly, Pope adds, "The slightly suspicious thing, though, is it's a part of London where it just so happens that a large number of film companies and visual effects companies are based. And some of the people do look a little bit self-satisfied. So I suspect this is a CGI hoax, and that someone is showcasing their skills." A perceptive comment!

Surprisingly, the most useful commentary on this video was found on the UFO and conspiracy-oriented website Above Top Secret (www.abovetopsecret.com/forum/thread720773/pg1). The forum participants, mostly anonymous, dug deeply and turned up facts that the "experts" seem to have overlooked. Of course, many of the comments in that very long thread are credulous and foolish, and I don't want to imply that all of the participants are

credible researchers. But I am definitely impressed with a few of them.

"C-Buzz" commented, "100% CGI. 1:18–1:22 the object doesn't actually go behind the clouds, it fades out. Not only that, it looks like he stuffed up creating this animation because if you have a look at the bottom left there is actually a lighting effect which probably isn't supposed to be there and a RED orb moving across the building." It's hard to see, but it's there. There's also a brief "green flash" on the building as well as a suspicious-looking red color on the "mothership." I'm not enough of an expert on digital processing to know what this means, but it reeks of digital tampering. Sharp eyes, C-Buzz!

"LiveEquation" posts:

> The video is a scam right and I have evidence. If you start watching the video at 1:21 you will see two artificial bubble glares and then delay of the UFO glare. The UFO vanishes into the clouds first. Then you see 2 fake bubble glares and the ufo glare moving in the same direction *after* the UFO has already vanished, delay of about 1 second. It's actually weird that the UFO cast a glare. That's a giveway [*sic*]. The person who made the video doesn't know jack about optics.

"GiftOfProphecy" adds,

> This video is clearly fake. You can prove it by watching the video starting at 1:00 and after, and stabilizing the video. You can see they did a horrible job motion tracking the camera movement . . . probably because they have a rolling shutter camera. If you watch the UFO you can see it is not shaking with the camera perfectly, it is shaking independently. However the "UFO" is shaking [at] the same rate and nearly the same magnitude, its direction and position are just not synchronized. That to me indicates several bad motion track points. In order to insert a fake UFO into the video they had to track certain pixels as they move and shake around, then apply that tracking to the UFO so it moves exactly the same as the camera (match moving). Sometimes the pixels will move, say 10 pixels in one direction, yet the computer detected the pixels move 12 pixels, and that creates a bad tracking point. Normally you can fix bad tracking points by hand, but when there is about 30 tracking points per second, it becomes very time consuming. If you apply the motion tracks to the UFO when it has bad track points, it will wobble and shake around similar to what you see in the video.

"Charlyv" noted, "Fake, stop action in frames shows no motion blur, Impossible for such recorded speeds in any consumer digital camera, regardless of make or resolution." Then "davespanners" opens up a whole new angle of investigation: "This is filmed outside coral bookmakers in clipstone / great portland street in London. If you google search that building You will eventually find this page [http://ny.beam.tv/who-we-are/the-mill], which is a tv production company that is in the very same building." Davespanners then goes on to quote from the company's website: "The Mill creates pioneering visual effects for the advertising, music, television and film industries. We craft commercials, music videos and generate compelling film and TV. We build installations, projections, applications and create multimedia content and experiences."

"EnigmaAgent" replies with a photo taken from that company's website of Managing Director Mike Smallwood, who appears to be the same man seen smiling in the video—apparently enjoying this incident way too much.

"Heliocentric" dug further and found a link from the Mill's website to a particular commercial for Sony. And that same Sony commercial is a "favorite" on the YouTube page of alymc01, who photographed the "UFOs." The noose tightens!

Chillingly, GiftOfProphecy observes that video hoaxers are now using claims of "copyright infringement" to make YouTube remove videos showing how an original video was hoaxed:

> The hoaxer "50nFit" is claiming copyright infringement on the video that proves his Jerusalem video is a hoax. . . . Now the videos that prove his London UFOs are a hoax were removed to avoid complete suspension [of the debunkers' YouTube accounts]. The "HOAXKiller1" channel may be suspended anyway because YouTube doesn't understand Fair Use laws, and allows the deceptive scumbag hoaxers to retaliate and claim copyright on videos that are for research and analysis.

If you place a video on YouTube showing how a UFO video was faked, the hoaxer will contact YouTube to force you to remove your analysis, claiming "copyright infringement."

* * * * *

Once again, the mass media was recently filled with breathtaking nonsense about a "ghostly mirage city" allegedly seen from Huanshan City in the eastern part of China over the Xin'an River. The phenomenon went viral starting with a dreadful June 26 piece in the *Daily Mail* of London, which proclaims, "Ghostly apparition of entire city appears over Chinese river . . . but is it just a mirage?" (http://tinyurl.com/5t94s7f). In fact, it's neither, as we will see. This story was accompanied by an equally dreadful video (www.youtube.com/watch?v=WwLhXmnbtTM).

Now the buildings in the video are obviously real because the details are quite sharp. Mirages are very different. Mirages are not something imaginary or dream-like. They are a perfectly real phenomenon of meteorological optics: the behavior of light in the atmosphere, where temperatures can often vary dramatically, result in different indices of refraction and hence non-straight light paths—think of a fun house mirror. Mirage images are never as detailed as these Chinese images because the different atmospheric layers are not stable enough to preserve details like that. Furthermore, mirage images always bring into view objects many miles distant, not close up like in this video.

There are two different kinds of mirages, superior and inferior. The inferior mirage is caused by cooler air overlaying much warmer air, creating images that appear lower than they actually are. It is by far the most common. Usually it results in a strip of the sky seeming to bend downward below the horizon. It's often seen on highways on hot days, looking like distant water. The superior mirage is more interesting, and rarer, as objects appear higher than they actually are, resulting in things becoming visible that are normally beyond the curvature of the earth. That Chinese "ghost city" is neither type of mirage. Typically with a superior mirage you will see a double horizon: an often slanted false horizon on top, with the actual horizon below it. The region between them represents a mirage image of distant water. The Weather Doctor has a pretty good explanation of mirages (see http://tinyurl.com/3rvko5n).

When I was a student at Northwestern University my dorm room faced Lake Michigan. The double horizon of the superior mirage was actually a fairly common sight in the springtime, when warmer air would blow in from the south over the still quite frigid lake. At night, images of lights of cities in Indiana and Michigan normally below the horizon would occasionally become visible. Similarly, people standing on the lakeshore in southwest Michigan periodically report seeing dramatic nighttime UFOs over the water—they are probably seeing mirage images of the lights of Chicago pop into view.

Any reporter worthy of that title would have followed through and determined *exactly* what was being seen: which buildings those were in the video and their location. Certainly at least some people who live in that area would be able to identify those buildings and show on a map exactly where each building is. If you are in Huanshan City and you speak Chinese or have an interpreter, how difficult would it be to interview people to find out *exactly* which buildings are being seen in the video and where those buildings are located, thus solving the "mystery"? Australian photographer and film producer Auki Henry did exactly that (see http://tinyurl.com/3jnqkzk). He says, "The reality was bad Chinese translation combined with hyper-sensational-ist reporting. All the buildings in the footage are real buildings, not visions, mirages or illusions, they actually physically stand exactly where they were filmed. The only thing out of the ordinary here is they are surrounded by floodwater and mist."

Why is it that no reporter bothered to do his or her job and get to the bottom of this story? *News reporters don't want to get facts. They want to get ratings.* And why let mere facts get in the way of a great story?

Henry has nailed down every significant detail. He gives us a map showing the location of each of the "ghost" buildings. And as far as I can tell he did it without even going to China or interviewing anyone there. The Xin'an River was at flood stage, and the waters generated fog that obscured the bottom parts of the building, making the tops of the buildings appear to be floating in air. And there's your big mystery solved.

Why is it that no reporter bothered to do his or her job and get to the bottom of this story? *News reporters don't want to get facts. They want to get ratings.* And why let mere facts get in the way of a great story? ■

STEVEN NOVELLA

Steven Novella, MD, is assistant professor of neurology at Yale School of Medicine, the host of the *Skeptics' Guide to the Universe* podcast, author of the *NeuroLogica* blog, executive editor of the *Science-Based Medicine* blog, and president of the New England Skeptical Society.

Have You Had Your Antioxidants Today?

A successful marketing campaign can be scarily effective—make a claim enough times and people will believe it. Then just take the claim for granted; it becomes something everyone knows and no one questions. Back it up with some "sciencey" razzle-dazzle and link it to a combination of fear and hope, and you can have an entire industry based on nothing but marketing hype.

Take antioxidants (or rather, don't take them): if you believe the hype, then you want them in your food; you want to take them as pills; and you want the maximum most powerful antioxidants that can be found in nature (especially from some obscure tropical fruit). Unfortunately, the evidence does not support the claim that there are any health benefits to taking antioxidants.

The theory behind antioxidant claims sounds very compelling. Oxidants are chemicals (free radicals, also called reactive oxygen species or ROS) that are the products of metabolism; they are highly reactive and can cause damage to proteins and cells. This damage is a major contributor to aging and disease. Antioxidants neutralize these free radicals and prevent damage.

Unfortunately, medical science is rarely so clean and simple. This nice story is true, as far as it goes (the best lies always contain a kernel of truth). Twenty years ago this was the state of our knowledge of ROS and antioxidants, and there was legitimate hope that antioxidants would be a useful therapeutic tool. However, as research continued we learned that the picture is more complex: The body has evolved a natural defense against the onslaught of ROS. These compounds are called free radical scavengers or antioxidants (such as the protein superoxide dismutase and some vitamins like C and E) and their job is to gobble up ROS before they can damage cells.

In addition, some ROS actually serve a purpose in the body, for example as signals to cells or as neurotransmitters

(nitric oxide). In fact, the body has evolved a balanced and complex system to maintain homeostasis between ROS and antioxidants. Influencing that system by taking large amounts of exogenous antioxidants may not be such a good idea. In other words, if a balance between ROS and antioxidants has evolved, there is no reason to believe that there are any benefits to tipping the scales in one direction—toward antioxidants. In fact, doing so may cause harm.

What does the actual clinical evidence show? Well, to find out we have to go claim by claim.

The best current evidence shows that antioxidant vitamins are of no use in improving cognitive function or in preventing dementia (Gray et al. 2008). If we look at other specific neurodegenerative diseases, the picture is a bit more complex. Some studies show that vitamin E (but not C) may slightly reduce the risk of motor neuron disease, but only in women (Wang et al. 2011). Overall, the evidence is ambiguous and does not support a benefit for treatment.

In Parkinson's disease (PD) the picture is more complex. There is some evidence that eating foods rich in vitamin E may help prevent PD, but taking vitamin E supplements does not. So perhaps it is something other than the vitamin E in these foods that is of benefit, or perhaps eating healthy foods in general is simply a marker for some other variable that protects against PD. Other studies show a benefit from taking the vitamin supplements but not changing diet (Miyake et al. 2011). In other words, the evidence is ambiguous.

It is reasonable to conduct further research into antioxidants and degenerative diseases. Current evidence is mixed, without any clear benefit, but there is enough positive preliminary evidence to continue to study the potential of antioxidants in preventing degenerative diseases.

The evidence for taking antioxidant supplements in the general population is also less than definitive. In addition, it actually suggests the potential for harm. A comprehensive review published in 2008 concluded: "We found no evidence to support antioxidant supplements for primary or secondary prevention. Vitamin A, beta-carotene, and vitamin E may increase mortality" (Bjelakovic et al. 2008).

That's right—there might be an increased risk of death from taking vitamins A and E. The data is far from definitive, but it shows that we cannot assume that supplements, even vitamins, are harmless. It also shows that we need to be humble with our simplistic theories of biology. Until the research has had time to fully explore a biological question, we should not be confident in our extrapolations to clinical effect. Therefore, even when the theory sounds good, we always need to do clinical studies to see what the net effects are in humans.

When it comes to antioxidants, there is still the potential that they may be useful in specific situations. At present, however, there is no evidence to support going out of your way to eat lots of antioxidants in food or to take antioxidant supplements. In fact, doing so may be harmful. This evidence is at odds with the overwhelming marketing hype that has successfully created an irrational demand for a dubious product. ■

If a balance between free radicals and antioxidants has evolved, there is no reason to believe that there are any benefits to tipping the scales in one direction—toward antioxidants. In fact, doing so may cause harm.

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[SCIENCE WATCH KENNETH W. KRAUSE

Kenneth W. Krause is a contributing editor and books editor/columnist for the *Humanist* and a contributing editor for the SKEPTICAL INQUIRER. He may be reached at krausekc@msn.com.

The Effect of Teachers Unions on Student Performance

"People who do well under the status quo, whether it's the unions, whether it's the politicians . . . will protect a status quo that serves their needs, even if it doesn't serve the needs of students. We have to move to a customer-focused school system."

—Joel Klein, former chancellor of New York City schools (2002–2010)

Thanks in part to Davis Guggenheim's 2010 documentary, *Waiting for "Superman,"* many Americans are aware of the demoralizing struggles students often face in public schools—especially in disadvantaged districts. This poignant film features several desperate families that want nothing more than to save their children's lives by helping them to escape their local schools.

Although Guggenheim is a liberal private-sector union member himself, his movie highlights the ominous role of public-sector teachers unions in protecting bad educators and their perverse rules. Also emphasized is their stubborn opposition to charter schools and, worst of all, their tendency to make constructive change gallingly difficult.

Superman also highlights the infamous "Rubber Rooms" of New York City. Beginning in 2009, these Temporary Reassignment Centers quartered more than seven hundred teachers considered too incompetent to remain in class. They didn't teach, of course, but they arrived at and departed from the Rubber Rooms every day at the regular time, as if they were still earning their living. They were paid full salaries with full benefits. They had vacations and summers off.

In salary and benefits alone, these defective teachers siphoned between $35 million and $65 million per year from their city's already impoverished school budget—a lot of money that could have been spent on children. Mayor Michael Bloomberg and Chancellor Klein tried to detach them from the payroll, but state tenure laws, restrictive collective bargaining contracts, and the United Federation of Teachers—which dared to compare its members' Rubber Rooms to the prisons at Guantanamo—made such a commonsense solution impossible.

How could this happen in a community that truly values education? "The New York City school district is

not organized to provide the best possible education to its children," argues Terry Moe, professor of political science at Stanford University and senior fellow at the Hoover Institution (Moe 2011). Instead, thanks to union-influenced legislation and the contemptible rules contained in the collective bargaining contract, "the district is literally *organized* to protect bad teachers and to undermine the efforts of leaders to ensure teacher quality."

Today, the National Education Association (NEA) and American Federation of Teachers (AFT) are 4.5 million members strong and clearly the most powerful interest groups in American education, perhaps in all of politics. Union dues alone provide them with astounding sums of cash for campaign contributions and lobbying strategies. They rank first among the top twenty-five all-time donors in federal elections. For example, they contributed $59,354-,731—95 percent of which went to Democrats—between 1989 and 2010. During the 2010 election cycle alone, the NEA spent $40 million, giving $2 million directly to Democratic candidates. At the same time, the AFT awarded $2.6 million to Democrats compared to $8,000 to Republicans.

They send armies of well-trained activists to every political district in the country. At any time, they can finance highly effective media campaigns on any topic or for any candidate they like. "No other group in the politics of education," Moe laments, "representing administrators, say, or school boards or disadvantaged kids or parents or taxpayers, even comes close to having such weaponry."

So how much of this power is ever converted into policies that actually benefit education? Unions do cause increased spending, but money *per se* has little if any effect on student achievement. While student test scores since 1970 haven't budged, we've spent more than twice as many inflation-adjusted dollars on every child.

Unions fight hard for across-the-board teacher pay raises, but who loses when bad teachers are paid more and good teachers less than their actual worth? Politically powerless children, of course. Unions love smaller class sizes, too—but contrary to popular belief, normal class size reductions have almost no impact on student learning.

"The unions pursue their own interests," Moe confirms, "and policies good for the unions are often bad for kids" (Moe 2006). Let's glance at just a few of the diktats that typically show up in collective bargaining contracts:

Arguably, the most maddening rules require that teachers be paid on a salary schedule, based on years of experience and education—never on performance. Other rules make it nearly impossible to dismiss teachers for poor performance and mandate complex, time-consuming grievance procedures. Some require principals to give advance warning to teachers before visiting their classrooms and allow teachers, not principals, to make decisions about transfers and class assignments.

The rules also limit the number and duration of faculty meetings and parent conferences that teachers can be required to attend and the number of minutes teachers can be required to be on campus. They guarantee teachers a certain amount of "prep time" away from their students and restrict teachers' non-teaching duties, including lunch duty and hall duty. They also give teachers time off for union purposes.

Unions may claim what's good for teachers is good for students, but most people, Moe guesses, "would be absolutely shocked" to know what's really lurking in the collective bargaining contracts that govern their kids' education and determine their futures.

How Do Teachers Unions Affect Student Performance?

"I find that teachers' unions are primarily rent seeking, raising school budgets and school inputs but lowering student achievement by decreasing the productivity of inputs."

—Caroline Hoxby, professor of labor economics at Harvard University in 1996

The professional, peer-reviewed literature has remained frustratingly silent on the issue of how unions affect student performance. Fortunately, however, two district- and school-level studies—as opposed to those at the state level, which tend to be highly aggregated and poorly controlled—have been published in top-quality academic journals. Each concludes that collective bargaining for teachers has a significantly *negative* effect on student performance.

Unions fight hard for across-the-board teacher pay raises, but who loses when bad teachers are paid more and good teachers less than their actual worth? Politically powerless children, of course.

The first was a national study published by Caroline Hoxby, who set out to explain three related "empirical puzzles" (Hoxby 1996). First, and most generally, why did school inputs (government spending) have a significant effect on student outputs (performance) prior to around 1960—when states began granting teachers the right to collectively bargain—but not after that time?

Second, why do the data continue to show no relationship between school inputs and student learning, even after controlling for students' socio-economic background? Third, why do metropolitan areas with few opportunities for competition among public schools tend to show more generous inputs (for example, higher per-pupil spending, higher teacher salaries, and lower student-to-teacher ratios) yet poorer student performance?

Hoxby initially noted the precise timing of legislation facilitating teacher unionization and collective bargaining. She then analyzed district data from across the United States—on student dropout rates in particular—to isolate the impact of union activity on student performance.

As the above quote suggests, Hoxby discovered that teachers unions produce two highly regrettable effects: they cause taxpayers to spend more on education and, at the same time, they decrease school productivity. In other words, the overall impact of unions on society and education is decisively *negative*. Unions use their political power and the process of collective bargaining to waste our money.

Somewhat incidentally, in a later study Hoxby and Andrew Leigh from the National Bureau of Economic Research explored why, since 1960, the share of teachers in the highest aptitude category (top 5 percent of all college grads) fell from 5 percent to 1 percent, and the share of teachers in the lowest aptitude category (bottom 25 percent of all college grads) rose from 16 to 36 percent (Hoxby and Leigh 2004).

Initially, Hoxby and Leigh expected to prove the "pull" hypothesis, proposing that increasing pay parity with men in non-teaching occupations began to draw women out of teaching. But the evidence proved otherwise. Instead, smart people were being "pulled" out of education because of increasing compression of teachers' pay. Good, bad, or ugly, all teachers are essentially treated alike. Why? Because unions not only defend ineffective teachers, they routinely oppose merit pay for exceptional teachers. Unions and collective bargaining, Hoxby and Leigh discovered, deserve much of the blame for the dumbing-down of educators as well as their hapless students.

But Terry Moe would publish the second and most revealing study on point. Therein, he addressed the issue from an entirely new angle. Using a large, random sample of California school districts—all engaged in collective bargaining—Moe carefully probed the actual contents of the resulting labor contracts (Moe 2009).

He then coded the many rules contained in the agreements according to their "restrictiveness," the degree to which they shackled the hands of school administrators—precisely the people we elect to ensure quality education. The most restrictive rules, by Moe's estimation, gave teachers the right to make voluntary transfers (thus denying administrators the opportunities to send good teachers where they are needed most), limited the number of students that teachers were required to instruct, and thwarted the teacher evaluation process.

Finally, Moe applied a second variable: the California Academic Performance Index, which assigns each school a score determined by the performance of its students. He then framed the issue concisely as such: "Whether, in using their power to secure rules that advance the occupational interests of their members, the teachers unions are (unintentionally) limiting the public schools' capacity to educate children."

After controlling for variables pertaining to student backgrounds and the traits of particular schools and districts, Moe concluded that "collective bargaining does indeed have negative consequences for student achievement, and that the effects are concentrated on precisely those districts and schools—large districts, high-minority schools—that, over the years have been the worst performers and most difficult to improve." So, although almost everyone suffers because of teachers unions and collective bargaining rights, minority kids confined to big cities suffer the most.

"It follows," Moe adds hopefully, "that efforts to boost achievement in these contexts, as well as to reduce the achievement gap between whites and minorities, need to recognize that collective bargaining may be part of the problem—and that it deserves to be taken seriously as a target of reform." Short of actually abolishing teacher collective bargaining rights, he advises that "reducing the restrictiveness of labor contracts could have significant payoffs for public education."

The social stakes are astronomically high in public education. Parents and students should guard themselves against teachers unions' many excesses, and America can no longer tolerate educational mediocrity. Yes, we should reward effective educators who increase their students' success. But teachers must accept effective performance standards and the real-world pressures that attend them. In an upcoming column, I'll address reform in teacher compensation and accountability. ■

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[SKEPTICAL INQUIREE BENJAMIN RADFORD

Benjamin Radford is a research fellow at the Committee for Skeptical Inquiry and author or coauthor of six books, including *Tracking the Chupacabra: The Vampire Beast in Fact, Fiction, and Folklore.*

Kinoki Drains Wallet, Not Toxins

Q: I saw an advertisement for something called Kinoki Foot Pads, which seem to detoxify your feet. I wouldn't in my right mind buy these things, but what's the skeptical take on them?

—R. Hagen

A: Claims of "detoxification" and "cleansing" have been important (and lucrative) for the New Age and alternative medicine industries. The world is full of dangerous toxins, New Agers claim, and in order to get healthy and "balanced" (whatever that means) you need to periodically remove impurities from your body. "High Colonic Irrigation Colon Cleansing" is said to remove contaminants and detoxify your intestines for "improved health, more active lifestyle, and a more enjoyable, exciting life," according to one typical website. Then there's the old-fashioned toxin removal method of sweating—though, as I discussed in an earlier "Skeptical Inquiree" column ("Sweating the Small Stuff," SI, May/June 2010), contrary to popular belief sweat does not actually remove toxins. And don't forget ear candling, a bogus procedure by which ear wax and toxins are supposedly drawn out of the ear using a lit, hollow candle tube (see "On Ear Cones and Candling," SI, September/October 2000).

Actually, the human body does a pretty good job of eliminating toxins on its own. Virtually all products claiming to cleanse and detoxify the body are worthless and unnecessary. Still, that doesn't stop their being marketed, and Kinoki foot pads are one of the most popular in recent years.

Kinoki promotional literature describes how the large, adhesive bandages work:

> Formulated in Japan using all-natural tree extracts and powerful negative ions to rid the body of harmful toxins, this foot pad works on the principle of foot reflexology. Simply place the pads on the soles of your feet (or a targeted body part such as the shoulder or knee) before going to bed. By morning the pad will have absorbed toxins accumulated in your body from pollution, radiation exposure, etc., turning the white pad to a shade from gray to black.

The Kinoki pads remove "heavy metals, metabolic wastes, toxins, parasites, chemicals, and cellulite" from the body. No need for expensive liposuction or plastic surgery: the pads remove cellulite! And since they absorb radiation, they can apparently also be used in the event of nuclear accidents, like the one that devastated Japan earlier this year.

How exactly this is done is never explained. How do the pads know which of the body's countless chemicals (many of them crucial for good health) to remove? Furthermore, even if the pads worked as described they couldn't leach out enough toxins or heavy metals to make a difference.

For those not impressed by the plentiful testimonials, perhaps the most effective sales tool is the pads themselves, which do indeed turn unappetizing colors within a day or two of being placed on the body. All that black, disgusting color must be toxins coming from somewhere, right? Well, maybe not. One writer, Chris Woolston (2008) of the *Los Angeles Times*, did a little "not-quite scientific experiment: I put a few drops of sterile saline solution on a fresh pad. The result: a dark-gray, unsightly mess that looked exactly like the pads I'd been pulling off my feet. Either moisture alone can discolor the pads or the saline industry has some explaining to do. The pads also turned dark after a few minutes near a warm fireplace."

If people feel better after using the Kinoki pads, it's for the same reason that people feel better after using other discredited devices like magnetic insoles or Power Band bracelets: the placebo effect. People subjectively report feeling better after getting any treatment, whether effective or sham. Kinoki pads may not leach toxins from your feet, but they do leach money from your wallet. ■

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Did Shakespeare Write Shakespeare?

Much Ado about Nothing

Anti-Stratfordians start with the answer they want and work backward to the evidence—the opposite of good science and scholarship. They reverse the standards of objective inquiry, replacing them with pseudoscience and pseudohistory.

Could a mere commoner have been the greatest and most admired playwright of the English language? Indeed, could a "near-illiterate" have amassed the "encyclopedic" knowledge that fills page after page of plays and poetry attributed to William Shakespeare of Stratford-upon-Avon? Those known as "anti-Stratfordians" insist the works were penned by another, one more worthy in their estimation, as part of an elaborate conspiracy that may even involve secret messages encrypted in the text.

Now, there are serious, scholarly questions relating to Shakespeare's authorship, as I learned while doing graduate work at the University of Kentucky and teaching an undergraduate course, Survey of English Literature. For a chapter of my dissertation, I investigated the questioned attribution of the play *Pericles* to see whether it was a collaborative effort (as some scholars suspected, seeing a disparity in style between the first portion, acts I and II, and the remainder) or—as I found, taking an innovative approach—entirely written by Shakespeare (see Nickell 1987, 82–108). However, such literary analysis is quite different from the efforts of the anti-Stratfordians, who are mostly nonacademics and, according to one critic (Keller 2009, 1–9), "pseudo-scholars."

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peare'?

by Joe Nickell

Through-the-Looking-Glass Syndrome

Like many other crank ideas and conspiracy theories, the notion that William Shakespeare did not write the plays and poems attributed to him may at first sight seem absurd. But step through the looking glass (to use Lewis Carroll's term) and adopt the farfetched premise, and things can look very different. By thus starting with the answer and working backward to the evidence—the opposite of the approaches of science and scholarship—one can seemingly reverse the burden of proof and mirror the development of a viable hypothesis.

I call this process the Through-the-Looking-Glass Syndrome because the individual who suffers from such a bout of contagion has entered a realm in which the very standards of objective inquiry are effectively reversed, becoming their superficial lookalikes: pseudoscience, pseudohistory, and so on.

People are drawn into this illusory world, it appears to me, by something other than impartial reason. Having investigated questionable claims for more than four decades, I have marveled at how certain persons have walked, been lured, or stumbled headlong into some strange but profound belief. For example, time and again someone has been so attracted to the "haunting" image on the Shroud of Turin that he will not accept it as the red-ocher (iron-oxide) pigmented work of a confessed fourteenth-century artist, which has been confirmed by microchemical tests and radiocarbon dating. Wishfully believing that the cloth really wrapped the body of Jesus in the tomb, he sees the forger's confession as false, the iron-oxide as a contaminant, and the carbon-dating as an error resulting perhaps from a burst of radiant energy that altered the carbon ratio at the moment of Christ's miraculous resurrection (Hoare 1994; cf. Nickell 1998).

Countless more examples could be given. Anthropologist Grover Krantz believed that Bigfoot—indeed as portrayed in the famously faked Roger Patterson "Bigsuit" film of 1967—was the surviving giant ape Gigantopithecus. Harvard psychiatrist John Mack ignored evidence of his patients' fantasy proneness and "waking dreams" to suggest they had been abducted by aliens. And Sir Arthur Conan Doyle, creator of the rationalist detective Sherlock Holmes, was easily duped both by séance trickery and schoolgirls' hoaxed fairy photos (Nickell 2011, 68–72; Nickell 2007, 251–58; Nickell 1994, 153, 175–76).

As we see, many of the proponents of such ideas are quite intelligent. However, it seems that—just as in jujitsu when one's large size becomes a liability once one has been thrown off balance—a person's own intelligence can work against him when he is under the spell of the Through-the-Looking-Glass Syndrome: the intelligent person may be able to think up rationalizations and theoretical complexities of breathtaking cleverness, fooling first himself, then others. So it is with the Shakespeare-wasn't-written-by-Shakespeare minions, as we shall see.

Stage Left: The Baconians

For nearly two centuries after his death, Shakespeare went unquestioned as the author of the plays and poems bearing his name. The first recorded doubter was a Reverend James Wilmot who—having undertaken to write a biography of the Bard but being unable to turn up a single original manuscript in Stratford—expressed his suspicions to a Quaker acquaintance, who reported them to his local Philosophical Society in Ipswich in 1805. In 1848, Colonel Joseph C. Hart pub-

So fanatical was Delia Bacon that she once spent a troubled night, armed with lantern and spade, at Shakespeare's grave in Stratford's Holy Trinity Church planning to *literally* dig for answers.

lished a book on seafaring that also included his notions on various other topics. Hart despised Shakespeare, whom he accused of buying or stealing plays that he "first spiced with obscenity, blackguardism and impurities before they were produced"; he felt the admirable portions, such as Hamlet's soliloquies, were attributable to another (Keller 2009, 138–41).

The first book-length assault on the Bard was launched in 1857 by a woman named Delia Bacon. Her 675-page *The Philosophy of the Plays of Shakspere Unfolded* cast Shakespeare as "a stupid, ignorant, third-rate player" in a "dirty, doggish group of players." Surely he could not have written the great works bearing his name, she concluded. Rather, Bacon (the sister of Congregational minister Leonard Bacon) believed the works must have been produced by a secret society of literary figures with Sir Walter Raleigh (1552–1618) as head and Sir Francis Bacon (1561–1626) as guiding light. She believed, wrongly, that she was descended from the latter. So fanatical was Delia Bacon that she once spent a troubled night, armed with lantern and spade, at Shakespeare's grave in Stratford's Holy Trinity Church planning to *literally* dig for answers. Believing she had deciphered cryptic messages in Francis Bacon's letters that pointed to certain secrets—perhaps even manuscripts—hidden in a hollow beneath the gravestone, she fully intended to excavate but then struggled with her supposed evidence and finally lost her nerve. She died insane at age forty-eight (Keller 2009, 141–42; Schoenbaum 1991, 385–94).

Delia Bacon had set the stage, as it were, for subsequent "Baconians"—those who became convinced Sir Francis Bacon had indeed written as "Shakespeare." Enter a Minnesota crank named Ignatius T. Donnelly, who had previously "proved" that both Aztecs and Egyptians descended from a race that inhabited the (imaginary) "lost continent" of Atlantis. Donnelly pored over a copy of Shakespeare's complete plays, the 1623 First Folio (see figure 1), and divined certain mathematical formulas (involving a set of "basic numbers" and "factor numbers") that let him "decipher" supposed messages from the text. When the result was gibberish, as it often was, Donnelly modified the rules, which made cryptographers quick to laugh at his approach. "They pointed out," explains code master Fletcher Pratt (1942, 87), "that his rules for solution were practically all variables, and that his solution in fact consisted of finding whatever words he wished to make up part of his 'decipherment' and then finding some combination of basic numbers and factor-numbers that would yield the desired result. Given so many variables it is possible to extract almost any message from a wordage as large as Shakespeare's. . . ."

Nevertheless, other Baconians followed. Orville Ward Owen, a physician in Detroit, caught the bug and spent the remainder of his life utilizing his own supposedly improved method of decipherment. One of Owen's divined Baconian messages urged, "Take your knife and cut all our books asunder, And set the leaves on a great firm wheel/ which rolls and rolls." Inspired, Owen constructed two massive reels, turned by (appropriately) a crank, which unrolled a thousand-foot canvas. Mounted in rows on this were the printed pages of text from Shakespeare, Bacon, and others. Owen or a member of his three-woman staff operated the machine using "key" words to extricate text dictated to a typist. In time Owen published five of his six volumes of *Sir Francis Bacon's Cipher Story*. Still later he received communications from Bacon's ghost (Schoenbaum 1991, 411–13).

Owen's secretary, Elizabeth Wells Gallup, next launched her own unique method of deciphering Bacon's supposedly concealed messages. She in fact employed a "biliteral cipher" actually invented by Bacon. (One of the ciphers I studied as a budding cryptanalyst of about twelve, it employs two fonts of printing type, say, roman and italic, which we can designate *a* and *b*. The text that will carry the secret text is marked off in five-letter units, so that the letter *A* can be represented by *aaaaa*, *B* by *aaaab*, and so on [see Gaines 1956, 6–7].)

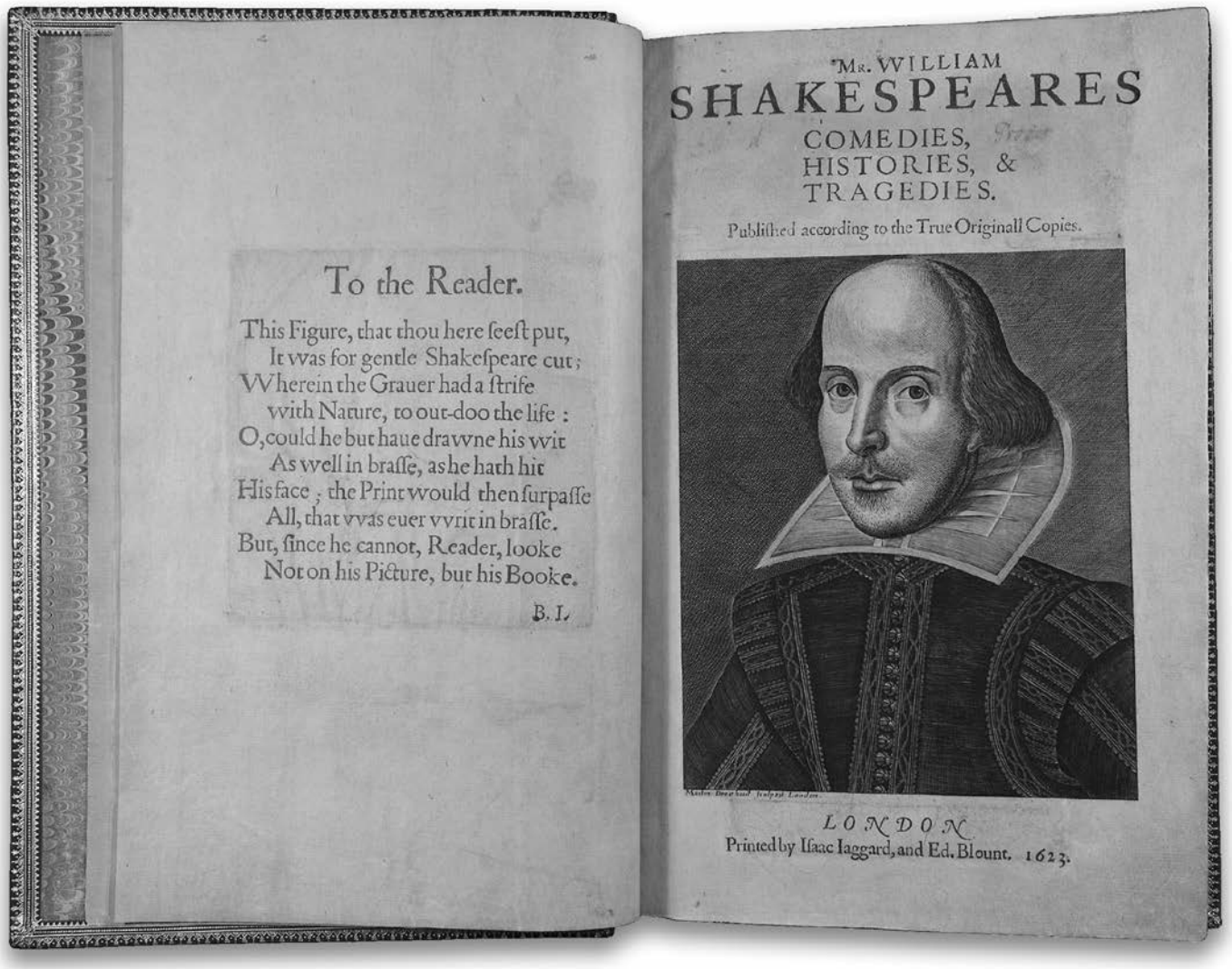
Unfortunately, Gallup's supposed decipherments were subjected to detailed analysis, most thoroughly by the famous American code experts Colonel William and Elizabeth Friedman, with devastating results. The type of Elizabethan times bore imperfections, became battered, was often mixed indiscriminately, which—coupled with the effect of rough paper and other factors—meant that "differences" in type could easily be found, even where none existed (Pratt 1942, 90–91). As Shakespearean scholar Samuel Schoenbaum (1991, 419) says of Gallup, "What she had discovered was not a biliteral cipher but a biliteral Rorschach test." Moreover,

the revealed text bore words that were not in use until after Bacon's death. Gallup did admit, at one point, that to distinguish between *a* and *b* typefaces, it was necessary to use "intuition" (Pratt 1942, 91–92). The entire quest of the Baconians to find secret texts in Shakespeare's writings is reminiscent of journalist Michael Drosnin's *The Bible Code* books (1997; 2002), which tout "predictions" of modern events that were allegedly "encoded" in the Hebrew Bible about three thousand years ago. (See Thomas 2003 for a rebuttal.)

Marlowe et al.

Although there is no convincing evidence that Bacon ever wrote a single play, there were many adherents to the Bacon-as-Shakespeare "theory." However, that conviction was eventually followed by a Marlovian craze—the belief that Christopher Marlowe (1564–1593), the greatest Elizabethan dramatist prior to Shakespeare, penned "Shakespeare." The fact that Marlowe was killed in a tavern fight before the majority of the Bard's plays had been written did not faze the Marlovians. Having stepped through the looking glass, their chief advocate, a Broadway press agent named Calvin Hoffman, conjured up an explanation.

Marlowe's death, Hoffman imagined, was staged by killing some foreign sailor in his stead, while Marlowe fled via France to Italy where he began to write plays before eventually returning to England in disguise. Everything was supposedly arranged by his aristocratic gay lover who hired an actor, Will Shakespeare, to allow his name to grace the manuscript. This imagined scenario was, said the *Times Literary Supplement* (January


To the Reader.

This Figure, that thou here ſeeſt put,
It was for gentle Shakeſpeare cut;
Wherein the Grauer had a ſtrife
with Nature, to out-doo the life:
O, could he but haue drawne his wit
As well in braſſe, as he hath hit
His face; the Print would then ſurpaſſe
All, that was euer writ in braſſe.
But, ſince he cannot, Reader, looke
Not on his Picture, but his Booke.

B. I.

Mr. WILLIAM
SHAKESPEARES
COMEDIES,
HISTORIES, &
TRAGEDIES.

Published according to the True Originall Copies.

LONDON
Printed by Isaac Iaggard, and Ed. Blount. 1623.

Figure 1. The 1623 First Folio of Shakespeare's complete works.

The fact is that there is no proof (innuendo and coincidence and mystery mongering are not proof) that "Shakespeare" was written by anyone other than William Shakespeare.

24, 1956), "a tissue of twaddle," but surely the reviewer was being too kind (Schoenbaum 1991, 445–47).

Beyond Marlowe, some seventy other candidates have been proposed, ranging from Sir Walter Raleigh, Cardinal Wolsey, and Ben Jonson to various earls—of Darby, of Essex, of Rutland, and, of course, of Southampton (the latter having been Shakespeare's patron)—and even Queen Elizabeth I (Wilson 1993, 15–20; Keller 2009, 135–36 Schoenbaum 1991, 395–404). Then there is the seventeenth Earl of Oxford, the current favorite of the anti-Stratfordians.

The Earl of Oxford

In 1920, an English schoolmaster with the unfortunate name J. Thomas Looney published his *"Shakespeare" Identified*, setting forth the claim that the seventeenth Earl of Oxford, Edward de Vere (1550–1604), was the true author of the plays and poems bearing Shakespeare's name. Intellectually naive, the book unsurprisingly attracted many followers.

The Loonies adopted "Oxford" as their standard bearer even though he had died before *King Lear*, *Macbeth*, *Antony and Cleopatra*, and several other plays were performed. They postulate that scholars misdated *Lear* and *Macbeth* and that the other plays, having been left unfinished, were subsequently completed by inferior dramatists (Schoenbaum 1991, 430–34).

Their evidence for Oxford as author is as questionable as their belief is impassioned. They discovered, for example, in a 1578 address to Oxford by fellow poet Gabriel Harvey, a tell-tale clue: Harvey says, "Thine eyes flash fire, thy *will shakes spears*…" [emphasis added]—an unmistakable reference to the Bard! Unfortunately, this is a rogue translation of the Latin, which really just says, "Thine eyes flash fire. Thy countenance shakes a spear" (Keller 2009, 162–64).

One Oxfordian of the 1940s even enlisted the aid of a spiritualist. The medium used "automatic writing" to link Shakespeare, Bacon, and Oxford, who supposedly had collaborated to produce the plays (Wilson 1993, 19–20).

Oxfordians believe the Earl of Oxford adopted "William Shakespeare" as a pen name. That the hyphenated version is used for about half of the quarto editions of the plays led one recent Oxfordian, Charles Ogborn Jr., to write in 2009, "When we come upon a regularly hyphenated English name compounding two words not in themselves names and also descriptive of an action, we may be sure that the name is fictitious and intended to be understood as of allegorical significance." This is absurd and begs the question, why then was not the hyphenated spelling used for all printed versions of the plays? In fact, creative phonetic spelling was common in Shakespeare's time, as evidenced, for example, by such different versions as Will, Willm, William, Willelmum, etc., and Shakspere, Shackspere, Shaxpere, Shagspere, Shakespear, Shake-speare, and Shakespeare; likewise, there were eleven different versions of Christopher Marlowe's surname (Keller 2009, 156–57).

In 1987 a moot-court debate on the Oxford-versus-Shakespeare controversy was held at the American University. It was presided over by three U.S. Supreme Court Justices: Harry Blackmun, William Brennan, and John Paul Stevens. They found in favor of Shakespeare, and Justice Stevens pointedly concluded that "the Oxfordian case suffers from not having a single, coherent theory of the case" (qtd. in Bethell 1991, 47).

Will the Real Shakespeare…

Or this heading could read, "Will, the real Shakespeare."

Although the anti-Stratfordians savage Shakespeare (but resent any criticism of themselves or their candidate for authorship), the fact is that there is no proof (innuendo and coincidence and mystery mongering are not proof) that "Shakespeare" was written by anyone other than William Shakespeare. And there is much evidence that he was indeed the author.

The famous individual of that name was a historical personage born at Stratford in 1564 and christened (according to the Holy Trinity Church baptismal register) on April 26: "Gulielmus filius Johannes Shakspere"—that is, translating from the Latin, "William, son of John Shakspere" (Schoenbaum 1991, 7–8). While there is no record of Shakespeare attending Stratford's grammar school, there is no record of anyone doing so prior to the nineteenth century (Matus 1991, 66); old records are frequently incomplete or missing (as I learned during my years as a certified geneaological specialist). A marriage license was issued on November 27, 1582, to "Willelmum Shaxpere et

Annam Whateley de Temple Grafton"—the clerk apparently mis-hearing the bride's surname, which was Hathaway; the matter was resolved by a bond of the next day for "Anne Hathwey" to wed "William Shagspere." Subsequent records list the baptism of their eldest daughter Susanna (in 1583) and twins, Hamnet and Judith (1585) (Schoenbaum 1991, 10–12).

From 1585–1592 transpired the somewhat misnamed "lost years," during which Shakespeare was known to have been in London. In 1592 Robert Green alerted his fellow dramatists to Shakespeare as a young literary encroacher, calling him

> . . . an upstart Crow, beautified with our feathers, that with his *Tiger's heart wrapped in a Player's hide* [quoting from Shakespeare's *Henry VI*[1]] supposes he is as well able to bombast out a blank verse [unrhymed iambic pentameter] as the best of you: and being an absolute *Johannes fac totum* [Jack-of-all-trades], is in his own conceit the only Shake-scene in the country.

The pun on his name, coupled with the readily identifiable line, represents the earliest mention of Shakespeare as an actor and playwright (Wilson 1993, 124–25).

Additional evidence reveals the continuing life of a very real person:

> For instance, Shakespeare is by no means without background documentation, albeit mostly of a dry-as-dust legal variety. With occasional exceptions, the christenings, marriages and deaths of the close members of his family are all to be found in the still-extant registers of his home parish church, Holy Trinity, Stratford-upon-Avon. As record of his life as a successful working actor, his name appears high in Ben Jonson's First Folio's cast lists of the performances of some of Jonson's plays by Shakespeare's company. In the case of some, but by no means all, of Shakespeare's plays as published in his lifetime, his name is linked with them formally both on the title page and on the surviving official register of the Stationers' Company, the official trade union of the booksellers and printers of his time. London Public Record Office documents show him to have acted as witness in a court case, complete with his authenticated signature to this effect. Also in London's Public Record Office and elsewhere are to be found deeds of his property dealings (with two more of his signatures), the wills of his London fellow actors and Stratford friends, which include some kindly remembrances of him, and his own will, the latter of which bears the final three of the six signatures generally agreed as authentically his. (Wilson 1993, 9)

William Shakespeare died about April 23, 1616, and was buried on April 25. In 1623 the famous First Folio of his plays, collected by fellow actors John Heminges and Henry Condell, was published (again, see figure 1), showing a body of work so impressive that many believe it must be the work not of a commoner but an aristocrat.

How did the Bard acquire the vast learning shown in his writings? Shakespeare's inherent genius would have been supplemented by a serious education in grammar school (where he would have learned some Latin and Greek) and later residence in London, Britain's intellectual center, where he obviously read omnivorously. Himself an actor, as well as a shareholder in an acting company and a theater, he befriended many playwrights, poets, scholars, travelers, gentlemen, and others (Keller 2009, 12, 271)—sources of knowledge indeed. (Nevertheless, Shakespeare did not always get things right: for example, he gave Bohemia a seacoast and put clocks in ancient Rome [Evans 1949].)

Oxfordians wonder at the absence of any manuscripts, letters, or diaries in Shakespeare's handwriting, but there is a general lack of such materials from Elizabethan and Jacobean dramatists (Keller 2009, 4). They apparently placed little value on keeping such items, since collecting literary autographs did not become a serious endeavor until the latter part of the eighteenth century (Matus 1991, 70).

To sum up, there really was a Shakespeare, and to believe that someone else wrote the plays and poems bearing his name—that there was in fact a conspiracy to perpetrate an elaborate hoax—is to gratuitously violate the principle of Occam's razor, the dictum that the hypothesis with the fewest assumptions is to be preferred.

But those who have stepped through the looking glass will not be dissuaded. As Schoenbaum (1991, 451) notes, nothing "will erase suspicions fostered over a century by amateurs who have yielded to the dark power of the anti-Stratfordian obsession. One thought perhaps offers a crumb of redeeming comfort: the energy absorbed by the mania might otherwise have gone into politics." ■

Note

1. From part III, act I, scene iv, line 137. Shakespeare's correct wording is "O tiger's heart wrapt in a woman's hide!"

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Joe Nickell is CSI's senior research fellow and author (or coauthor or editor) of some thirty books, including one in progress, *The Science of Ghosts*.

Paranormal Misinterpretations of Vision Phenomena

We can actually see things that aren't really there in front of our eyes. Simple activities can help us to understand the real causes of such phenomena and to reject paranormal interpretations.

MICHAEL MAUSER

Are they auras or afterimages? Vitality globules or white corpuscles? Angels or phosphenes? What we believe often determines what we see and experience. Some simple activities can help us understand vision phenomena that may be misinterpreted as evidence for the paranormal.

Auras

In a brief review on the aura, a "glowing field surrounding a human being," Perez and Hines (2011) mention perceptual illusions as among many possible reasons the belief in auras persists. Dale et al. (1978) suggest two vision phenomena that may be involved in a perception of an aura: border contrast effects and afterimages.

When uniformly shaded fields are presented adjacent to one another, we perceive them as non-uniformly shaded with enhanced contrast at the border. This visual illusion was first reported by Ernst Mach (1865), and it is often presented as "Mach bands" as shown in figure 1 (Ratliff 1965). Figure 2 presents the illusion as a series of silhouettes and shows how an aura might be perceived. In either case, the bands can be revealed as truly uniform if you cover the borders with your fingers. The illusion results from a process known as lateral inhibition, wherein neurons associated with adjacent photoreceptors on the retina can influence each other to emphasize a border.

With regard to afterimages, I cannot say it better than Blackmore (1996, 37), who wrote:

> If you hold out your hand against a dark background and look at the space just beside the skin, you will begin to see a faint glow around it. . . . Light skin against a dark background provides high contrast and good conditions for after-images. As the eyes move slightly but rapidly about (as they always do), an after-image builds up around the edge of the hand and produces a light blur.

Most people are well acquainted with afterimages, so the only surprise here may be that our eyes are always moving without our being aware of it. You can see this jitter by first staring for a minute at the circle where the grid lines cross in figure 3, which will "print" the image of the grid on your retina. If you then stare at the plus sign in the square, you should notice that the afterimage jumps around as your eyes move.

Figure 1. Mach bands

Figure 2. A series of silhouettes

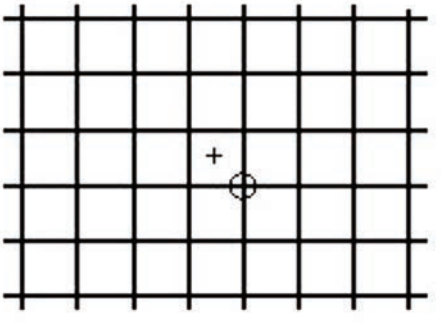

Figure 3. Eye movement demonstration (see text for explanation)

Vitality Globules

William Flexner informs us in *Introduction to Parapsychology* that any normal person can usually see what are variously called prana, vitality globules, or etheric globules. By "focusing the gaze intently into the sky for a few moments" (Flexner 2004, 128) you will see that the "globule wells out from an invisible source, appears and moves rapidly away, to give place to more globules" (147). Flexner writes that when we breathe in these globules of "raw energy" our bodies change them into "personal vitality" (128), so he clearly regards them as an atmospheric phenomenon that is beneficial to our health.

We can never be sure exactly what someone else is *seeing*, but what Flexner describes seems a lot like the blue field entoptic phenomenon (also called Scheerer's phenomenon or flying corpuscles). We sense light with the retina, which is at the back of the eye. Arteries, veins, and capillaries are present on top of the retina, and these plus the blood flowing through the capillaries can be seen under the right conditions. We see the arteries, veins, and capillaries as networks of shadows and the blood flow in the capillaries as numerous short-lived, seemingly erratic, rapidly moving dots of light with dark tails.

To see the larger blood vessels on the retina, close one eye and look straight ahead at a blank wall with the other while flashing a beam of light across the pupil from the periphery. This will cause a spot of light to be focused on the periphery of the retina. The spot acts as an internal light source casting shadows of the blood vessels on the retina. These shadows are not normally seen because the retina adjusts for any constant sensation. For other viewing techniques and more information, see Walker (1982).

Figure 4: Shadows of parafoveal capillaries on the retina (Horner 1834)

Under ideal viewing conditions, you can see dozens of these white cells moving at a time and recognize that they always trace out the same paths and move in time with your pulse.

To see the parafoveal capillaries on the retina, put a pinhole (~0.8 mm) in a business card and look at a bright, featureless surface (or the sky) while holding the pinhole close to your eye. Rapidly move the card in small circles, and through the hole you should see a pattern similar to that shown in figure 4. Note the capillary-free zone at the center of vision marking the fovea, where photo receptors are most tightly packed.

Most people have occasionally seen the blood cells moving through these retinal capillaries that surround the fovea when staring at a bright surface, particularly after physical exertion. The white blood cells are relatively large and must deform to fit in the capillaries, causing a space to open up ahead of them and the much more numerous and smaller red cells to pile up behind. The red cells absorb more light, so what we see are short, bright streaks with dark tails moving in the short, convoluted paths of the capillaries. Under ideal viewing conditions, you can see dozens of these white cells moving at a time and recognize that they always trace out the same paths and move in time with your pulse. To improve your viewing, you can hold a piece of cobalt glass or blue plastic up against a blue sky. A science museum (see www.exploratorium.edu/xref/exhibits/blood_cells_in_the_eye.html) or an ophthalmologist may have a viewer (sometimes called an entoptoscope), which is essentially just a bright, diffuse source of narrow-band blue light. For more information, see Sinclair et al. (1989) and Walker (1982).

Angels

Who knows what someone has actually seen when he or she claims to have seen an angel or a ghost? But some of the descriptions I have read sound like the person was seeing floaters or other entoptic (within the eye) phenomena. If you are really looking for and expecting to see an angel or ghost, just about any blurry thing you can't explain will probably do.

There are plenty of entoptic phenomena that look like blurry things, but I think floaters, phosphenes, and Purkinje's blue arcs are the most likely candidates for misinterpretation. Floaters are cells and tissue suspended in front of the retina. They cast shadows on the retina that can be very conspicuous when looking at a bright, featureless surface. If a floater is in your peripheral vision, you may become aware of it moving around but will not be able to get a clear view of it because it will move with your eye movement.

You can dramatically improve the visibility of floaters by holding a point source of diffuse light close to your eye. Put a small piece of aluminum foil on a hard surface and twirl a needle point on it to make a tiny hole (~0.2 mm). Cover the hole with matte-surface cellophane tape, and hold the foil close to your eye while looking at a bright light source through it. Light from the hole will be refracted by the cornea and lens to cast distinct shadows of things on and inside your eye as shown in figure 5. If you move the foil back and forth and up and down while continuing to look straight ahead, you will be able to gauge the relative distance of various things from the retina as well as see more of the eye's interior. Moving your head relative to a horizontal plane may also result in some of the floaters moving closer to the fovea where the shadows can be seen more clearly. See Walker (1982) for more information.

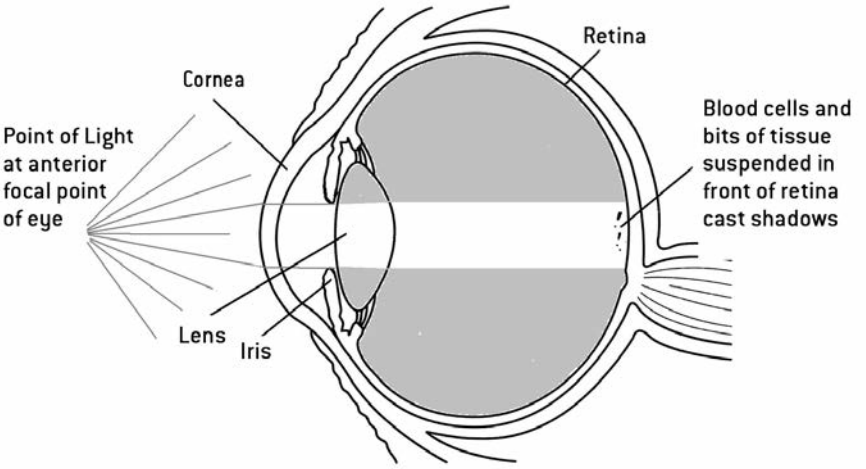
Retina
Cornea
Point of Light at anterior focal point of eye
Blood cells and bits of tissue suspended in front of retina cast shadows
Lens
Iris

Figure 5. Seeing floaters clearly

When you press on one corner of your eye, you can activate the photoreceptors, causing you to see a spot of light on the opposite side of the eye. This perception of light when no light is entering the eye is known as a phosphene. A rapid movement of the eye can also result in a phosphene at the optic nerve because the retina is apparently stretched there (Friedman 1941). If you do this at night, it can be quite noticeable, but only for the first one or two attempts—and you can't see it very clearly because it is fifteen degrees from your center of vision where visual activity is substantially less. See Walker (1981) for more information on phosphenes.

The photoreceptors can also activate spontaneously. This is why even in the total absence of light you don't see absolute blackness but instead a mottled gray called "dark noise" or "equivalent Poisson noise" (Elkins 2000, 241). With a little imagination you can "see" all kinds of things in this noise.

Purkinje's blue arcs are my favorite entoptic phenomenon both because of their beauty and because, as Richard Gregory (1997, 57) wrote, "Here we are seeing parts of our own brains!" There is nothing paranormal about it, but people may be tempted to misinterpret it because the phenomenon is fleeting and difficult to reproduce. To see these arcs clearly, go into a windowless room that contains a small LED indicator light (preferably red). Close your eyes and turn off the lights. After about thirty seconds, open just your right eye and look at the right edge of the LED. You will momentarily see two faint but distinct blue arcs streaking a distance of

Even in the total absence of light you don't see absolute blackness but instead a mottled gray called "dark noise" or "equivalent Poisson noise." With a little imagination you can "see" all kinds of things in this noise.

The photoreceptors on our retinas are not perfect transducers: they respond to stimuli other than light; they are noisy (as evidenced in the dark noise mentioned earlier); there is a lag in their response time; and they become saturated, requiring time to recover.

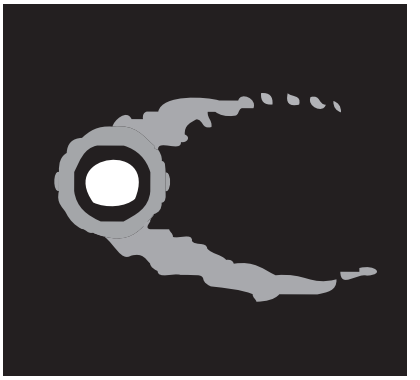

Figure 6. Purkinje's blue arcs (Purkinje 1825)

five or ten degrees from the light toward the right (see figure 6). (Your thumb held out at arm's length has a width of about two degrees.) If you then look directly at the light, you may see a faint blue haze around it. If you look to the left side of the light, you will see a blue spike where the arcs were. Stable images on the retina disappear quickly, but you can prolong the phenomenon by shifting your eye back and forth or by switching to your left eye for the reverse view. You will eventually need to turn the lights on and repeat the process when your eye becomes accustomed to the dark. What you are seeing is due to the action of the nerves on the retina that connect the photoreceptors in the center of vision (the fovea) to the optic nerve about fifteen degrees away. These nerves arc around the fovea, which is why you see arcs when you look at the right edge of the light with your right eye but only a spike when you look at the left edge. Because the eyes develop from the brain, these nerves are considered part of the brain. See Walker (1984) for more information.

Conclusion

Subjective visual experiences can be very hard to evaluate. The images on our retinas can result from objects and processes within the eye itself. If we are ignorant of these phenomena, we will not consider them when trying to interpret things we are seeing. The photoreceptors on our retinas are not perfect transducers: they respond to stimuli other than light; they are noisy (as evidenced in the dark noise mentioned earlier); there is a lag in their response time; and they become saturated, requiring time to recover. Vision is a brain process that starts at the retina, turning discrete signals on a two-dimensional surface into the perceptions of lines, surfaces, shapes, and three-dimensional objects in an external world. This process is influenced by expectations and preconceptions as many visual illusions demonstrate (see www.michaelbach.de/ot/).

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Michael Mauser is a former teacher and engineer. His interests in biology, physics, and psychology led him to develop numerous vision-related activities while a volunteer at the Arizona Science Center. He currently volunteers at the Denver Museum of Nature and Science and is working on a science activity book on the senses.

Civilizations Lost and Found: Fabricating History

Part Two: False Messages in Stone

The documentary *Lost Civilizations of North America* presents a distorted picture of American prehistory. The archaeological evidence presented to support notions of ancient pre-Columbian contact consists of long-discredited frauds.

BRADLEY T. LEPPER, KENNETH L. FEDER, TERRY A. BARNHART, and DEBORAH A. BOLNICK

"Our histories should give only what is known to be the truth, and falsehood should always be cried down whenever it is known to exist."

—David Wyrick, accused perpetrator, but likely victim, of the Newark "Holy Stones" forgeries (1860)

As noted in Part One of this discussion (SI, September/October 2011), the documentary *The Lost Civilizations of North America* (produced by Steven Smoot, Rick Stout, and Barry McLerran) purports to be an exploration of "the fascinating world of ancient North America, and why the artifacts and evidences of ancient civilizations have been lost and largely ignored" (qtd. from the DVD's website at www.lostcivilizationdvd.com/documentary.html). The ancient civilizations that are alleged to have left their mark in pre-Columbian North America include, at a minimum, Egyptians, Hebrews, and Celts. The documentary acknowledges that "mainstream archaeologists" do not accept the claim that any of these civilizations had contact with the indigenous North American cultures, yet it features the views of several "diffusionists," none of whom appear to be archaeologists ("mainstream" or otherwise). These diffusionists argue that a wealth of artifacts appears to support the "lost civilization" claim, and they purport to explain why mainstream archaeologists have so assiduously ignored or suppressed this evidence for numerous episodes of intercontinental intercourse.

What Is the Evidence for Lost Civilizations in North America?

Interspersed throughout *Lost Civilizations of North America* are images of a bewildering variety of artifacts, some of which are recognized icons of American archaeology while others are less familiar and even startlingly odd. The narrator explains these puzzling juxtapositions as follows:

> Many artifacts are shown throughout this film. Some artifacts are accepted as authentic by the scientific community today, and some are not. In many cases authentic artifacts may be shown alongside controversial ones. This is done in part to underscore the difficulty in determining authenticity, and also to illustrate a conflict that exists between mainstream anthropologists, and those who have been termed "diffusionists."

There are numerous problems with this justification for intentionally blurring the distinction among verifiably ancient artifacts, objects of questionable authenticity, and objects that are demonstrably fraudulent. First, it falsely suggests that there is a legitimate scientific controversy over the interpretation of these artifacts. Framing this alleged controversy in this way is very similar to creationists attempting to characterize their argument with evolutionary biologists. As with that more familiar canard, there is no real scientific controversy. We are not aware of *any* contemporary anthropologist who thinks there is scientific validity to the infamous artifacts featured in this documentary, such as the Michigan Relics (Halsey 2004), the Grave Creek Stone (Lepper 2008), the Bat Creek Stone (Mainfort and Kwas 2004), and the Newark "Holy Stones" (Lepper and Gill 2000) (figure 1).

The effect of presenting these bogus

objects in juxtaposition with ancient masterpieces, such as the Adena effigy pipe (figure 2), also shown in the documentary, is to validate infamous frauds at the expense of the authentic artifacts. It appears deliberately obfuscatory and is demeaning to the achievements of the ancient Native American artisans.

Second, we believe that the documentary's justification for mixing authentic with "controversial" artifacts wildly exaggerates the "difficulty in determining authenticity." In any archaeological analysis, the key to determining the authenticity of a putative ancient artifact is to establish its context. For virtually none of the disputed artifacts shown in the documentary is there any reliable information about its archaeological context. To begin with, none of the artifacts shown, nor any similar pieces that might lend support to the authenticity of the objects highlighted in the video, has been recovered in any modern archaeological excavation using the tools and techniques of late twentieth-century archaeology. This is a crucial point: by and large, artifacts with putative ancient Old World writing were found in New World sites during only a rather narrow window of time (primarily from the mid-nineteenth into the early twentieth century), a period during which there was enormous controversy concerning the origins of the mound builders of the American Midwest and Southeast. In the far more extensive archaeological fieldwork accomplished between 1930 and the present, no such artifacts have ever been discovered by professional archaeologists. We can think of no legitimate artifact category in which archaeologists ceased finding examples of an artifact type once the field became professionalized with applied scientific methodology.

In many cases, moreover, information on the historical context of these inscribed objects has demonstrated that they are frauds or forgeries. The video's narrator asserts, for example, that the Bat Creek Stone was "found using *modern* methods within the original surroundings" (emphasis added) (figure 3). Donald Yates, a featured diffusionist who holds a doctorate in classical studies, goes on to assert that naysayers can't dismiss this artifact because it was re-

Figure 1. Ostensibly discovered in an ancient mound located in West Virginia, the Grave Creek Stone's inscription (top) reflects an impossible mixture of a number of Old World written languages (Grave Creek Mound Museum). The artifact on the bottom is one of hundreds of "Michigan Relics" produced in the late nineteenth and early twentieth centuries that were supposed to prove the presence of all manner of Old World people in the New World in antiquity (courtesy of Thom Bell).

covered in an "official excavation by the Smithsonian Institution," as if that alone should be considered sufficient evidence—by professional archaeologists or anyone else, for that matter—for its acceptance as genuine.

It certainly is true that John Emmert, the man who claimed to have found the Bat Creek Stone, was in the employ of the Smithsonian Institution at the time of its discovery. During this period, the Smithsonian hired an eclectic assortment of individuals with varying levels of expertise to conduct local operations on the Institution's behalf. Emmert appears to have been one of the lesser qualified excavators, and he was later fired because of questions about the quality of his work (Mainfort and Kwas 1991, 12). Even discounting the obvious questions about his competence, since Emmert excavated the stone in 1889, his methods could hardly be considered "modern" in any meaningful sense. Finally, since the archaeologists Robert Mainfort and Mary Kwas discovered the source used by the forgers of the Bat Creek inscription, conclusively demonstrating it to be a fraud (Mainfort and Kwas 2004), consideration of Emmert's qualifications is moot. It is clear now that Emmert either perpetrated the fraud himself or failed to detect the imposture because of his dodgy methods.

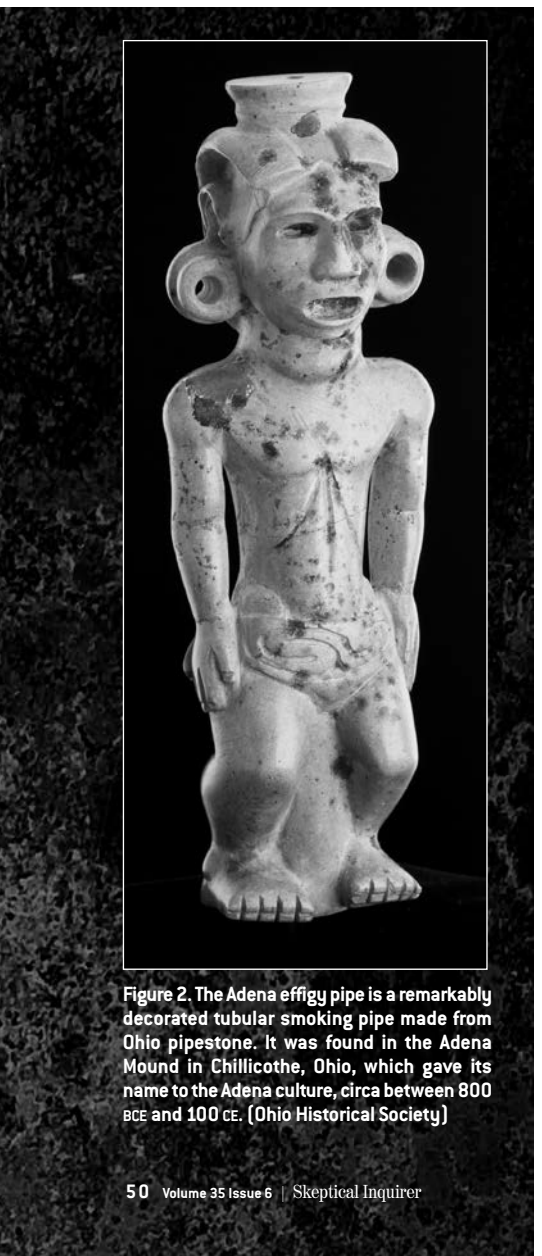

Figure 2. The Adena effigy pipe is a remarkably decorated tubular smoking pipe made from Ohio pipestone. It was found in the Adena Mound in Chillicothe, Ohio, which gave its name to the Adena culture, circa between 800 BCE and 100 CE. (Ohio Historical Society)

The Newark Holy Stones

The artifacts given the most screen time in the documentary are the so-called Newark "Holy Stones." In fact, the narrator refers to the controversy surrounding the interpretation of these artifacts as a case study that "demonstrates the division between some diffusionists and most mainstream archaeologists." If the producers of the documentary sincerely believe this statement, then it is difficult to understand why they feature only the diffusionist side of the argument. What makes this one-sided presentation particularly perplexing is that one of the scientists interviewed (one of the authors of this article) has written extensively on the Newark "Holy Stones" and therefore could have ably represented the "mainstream" view (Lepper 1999; Lepper and Gill 2000). Note that the narrator's use of the qualifier in his phase "most mainstream archaeologists" leaves the listener with the false impression that there might be some "mainstream archaeologists" out there who accept the Newark "Holy Stones" as authentic. We are aware of none who have gone on record in support of these egregious, if historically interesting, forgeries.

The Newark "Holy Stones" consist of five separate artifacts, at least two of which even many diffusionists acknowledge to be fraudulent (Lepper 1991). The documentary focuses on the second of the artifacts to be reported although both of the two surviving "Holy Stones" are featured in various video clips.

David Wyrick, a Licking County, Ohio, surveyor and avocational archaeologist, made his first sensational discovery, the so-called "Keystone," in a shallow excavation at the monumental Newark Earthworks. He found the "Decalogue Stone" (figure 4), even more spectacular and apparently definitive proof of his belief that ancient Israelites had built the ancient mounds, just five months later at a different site a few miles south of Newark (Lepper and Gill 2000).

The Reservoir Stone Mound, also known as the Jacksontown Stone Mound, was the largest aboriginal stone structure in North America north of Mexico. It was forty feet in height and 180 feet in diameter. First described in 1822 in a call to preserve the magnificent edifice, it was, nevertheless, largely destroyed between 1831 and 1832 when the stones were used in the construction of an extensive series of dikes framing the reservoir on the Licking summit of the Ohio and Erie Canal. Estimates vary, but between 10,000 and 15,000 wagon loads of stone are said to have been hauled away for this purpose. When the bulk of the stones had been removed, a portion of a circular arrangement of ten to twenty eight-foot-tall earthen mounds was revealed.

In the video, *Ancient American* magazine's publisher Wayne May narrates the story of Wyrick's discovery of the Decalogue Stone:

> They found one major earth structure in the center surrounded by twelve small burials. David Wyrick went straight for the middle one with nine other gentlemen and they began to dig that mound down and they uncovered it—and when they did they found a wooden coffin made out of oak and opening up that coffin in there was a large skeleton of a man, but also in this coffin was a little box no more than maybe about eight or ten inches in size and it was cemented shut. Wyrick and the men, while they were all there together, they pried this box apart and in it was a black stone. They opened this box and here was this unusual artifact.

This account of the basic facts of the discovery is riddled with errors. Some may seem trivial, but they are important to document because they demonstrate a pattern of carelessness with regard to facts that is depressingly typical of the diffusionist literature.

1. The Decalogue Stone was not found in the central mound but in one of the ten to twenty mounds arranged in a ring at the base of the stone mound. The exact total of these small mounds was never recorded, probably because the entirety of the stones have never been removed, leaving some still buried beneath the remnants of the mound. May's reference to "twelve" leaves the unwarranted impression of an exact count. The fact that May settled so precisely on the number twelve may have something to do with the mystical significance of that number in the Judeo-Christian tradition (twelve tribes of Israel, twelve disciples, etc.).

2. Wyrick did not undertake his investigation with nine other men but with five.

Sources allow us to identify at least four of them: Jacob Wyrick, John Nicol, John Haynes, and John Larett. Nicol's presence is significant, because he was directly implicated in the blatant hoax of two of the subsequent "Holy Stones" (Lepper 1991).

3. Wyrick's team did not discover the wooden "coffin." The "coffin," originally described as a "trough," was found in 1853 by William Parr (Wyrick 1860). Parr cut off a piece of the wooden trough to retain, but he left the rest in the hole to be reburied. Wyrick and a group of men returned to the site in August of 1860 to reexcavate the mound in order to recover the wooden "sarcophagus." The excavation that resulted in the recovery of the Decalogue Stone was Wyrick's second expedition to the site and at least the third time the mound had been dug into.

4. Neither Wyrick nor Parr recovered the skeleton of a "large man," and the Decalogue Stone was not found in the coffin but rather several inches beneath it. Wyrick (1860) reported that Parr found human bones, but they amounted to only "bits of skull," a few teeth, and some hair. There would have been no way to reliably identify either the sex or the size of the person represented by these meager human remains, and the bones are not known to be curated in any museum collection where they could be re-studied using modern forensic methods. The only artifacts associated with the human remains were ten copper bracelets. The Decalogue Stone was found in clay well below the original depth of the wooden burial platform.

May then recounts Wyrick's efforts to interpret the Decalogue Stone:

> They took it to some scholars—identified that it was probably some type of Hebrew. They took it to some rabbis living in the area and looking at it, they said yes they could read it and it was a complete rendition of the Ten Commandments. They called it block Hebrew. And so then naysayers started picking on Wyrick. He was accused of sticking this stone in front of these nine men somehow and being able to hide it and conceal it.
>
> And it wasn't until sometime in the 1900s, lo and behold, in Israel they find, guess what, they found block Hebrew. The block-style of Hebrew was given a name by the experts—monumental Hebrew, because of the way it was written. Long after Wyrick. After!

In other words, May is claiming that the version of Hebrew found on the Decalogue Stone could not have been fraudulently produced in 1860 because this form of writing was not known until years after the discovery of the stone. This is all nonsense. In fact, Wyrick took the Decalogue Stone directly to the local Episcopal Minister, John McCarty, who published a comprehensively annotated translation of the inscription within a week of its discovery (McCarty 1860).

There were rabbis who could, indeed, read the inscription. Abraham Geiger, a highly respected German rabbi and scholar of Hebrew, concluded in the July 27, 1860, *New York Times* that the Decalogue Stone inscription was "the bungling work of an unskilled stone mason and the strangeness of some letters as well as the many mistakes and transpositions was his fault. The letters are not antique. This is not a relic of hoary antiquity" (qtd. in Alrutz 1980, 41).

Geiger's assessment has been confirmed and elaborated by our colleague Jeff Gill, who noted specific errors in the inscription that could have occurred only if someone were working from a conventional nineteenth-century typeface Hebrew text and then converting

Figure 3. The Bat Creek Stone is one of a number of ancient artifacts found in North America bearing inscriptions in Old World scripts. All such artifacts have been shown to be fraudulent.

Figure 4. About 6.8 inches in length and made from black limestone, the Decalogue Stone is named for the fact that it is inscribed with the Ten Commandments in an ancient-looking form of Hebrew. It was discovered in 1860 during excavations in the remains of the largest stone mound in North America. (Johnson-Humrickhouse Museum)

each letter into the corresponding antique-looking character of the Decalogue alphabet. Doing so would result in a recurring pattern of error, which confirms the modern source for the inscription (Lepper and Gill 2000, 20). Frank Moore Cross, Harvard University professor of Near Eastern languages and one of the foremost contemporary authorities on ancient Hebrew, fully corroborated Gill's conclusions, writing that it was clear that "the modern forms of the Hebrew character[s] ... stand ultimately behind" the Decalogue Stone inscription (Cross 1991). Cross offered his opinion that the Decalogue Stone was a "grotesque" forgery that could not be taken seriously.

May's peremptory dismissal of the idea that Wyrick might have been able somehow to bury the fraudulent Decalogue Stone in front of the "nine" witnesses is completely unwarranted, since the mound in question had been dug into on at least two previous occasions. Moreover, Wyrick's plan to continue his investigation of the mound was known by at least five other individuals, any one of whom would have had ample opportunity to plant the artifact within the excavation before the day arranged for the second expedition. Nicol's subsequent involvement in a similar proven hoax casts considerable suspicion in his direction.

May's claims about the significance of block Hebrew, also called monumental Hebrew, are specious and uninformed. "Block Hebrew" is simply what palaeographers and epigraphers call Classical Hebrew orthography from the Second Temple–era down to the present, and there is no coherent correspondence between any ancient epigraphic Hebrew and the Decalogue alphabet.

Finally, by ignoring the historical context in which the Newark "Holy Stones" appeared, May and other diffusionists lose the opportunity to understand the true nature of the forgeries. The Newark "Holy Stones" represented an attempt to encompass the prehistory of the New World within the biblical history of the Old World, thereby undermining the dangerous doctrine of polygenesis, which sought to provide a scientific justification for both the enslavement of African people and the forced removal of Native Americans from their homelands. Ironically, these ideas would have provided some support and nuance for a central theme of the *Lost Civilizations of North America* documentary.

Figure 5. Petroglyph panels, like this spectacular example called Newspaper Rock (in Utah), are splendid works of art. While pointing out that petroglyphs and pictographs could not be identified as a formal written language, John Wesley Powell nevertheless explicitly recognized their significance for the stories they told of the lives of Native Americans. (K. Feder)

How Did Important Evidence of a Lost Civilization Come to Be 'Lost'?

Lost Civilizations of North America advances the unsupportable proposition that the epigraphic evidence supporting diffusionist claims was not simply discarded after a thorough review by fair-minded scholars, but that it was actually accepted and deliberately suppressed by official historians because "the idea that ancient inhabitants knew of and used Middle Eastern Hebrew symbols undermined the notion that Native Americans were isolated savages."

The claim that scholars have dismissed or even destroyed data to support racist interpretations of America's past are made explicitly by Wayne May in the documentary. His argument rests on the use of a selectively edited quotation by John Wesley Powell, who served as the director of the Smithsonian Institution's Bureau of American Ethnology and the U.S. Geological Survey: "Hence, it will be seen that it is illegitimate to use any pictographic matter of a date anterior to the discovery of the continent by Columbus for historic purposes." This quote appears on the screen just as we show it here, ending with a period as if this were the complete thought expressed by Powell. From this it is asserted that scientists knew about Native American writing and conspired to suppress the truth about such writing and its connection to Old World alphabets by forbidding the scientific use of these "pictographs." This is, of course, patently false, and when his statement is read in its full context it is clear that this was not what Powell meant. The quoted phrase does not end in a period as shown in the documentary. Instead, a semi-colon separates the first part of the sentence from the rest of Powell's thought. Powell's entire statement is repeated here

with the part excised in the documentary in italics:

> Hence, it will be seen that it is illegitimate to use any pictographic matter of a date anterior to the discovery of the continent by Columbus for historic purposes; *but it has a legitimate use of profound interest, as these pictographs exhibit the beginning of written language and the beginning of pictorial art, yet undifferentiated; and if the scholars of America will collect and study the vast body of material scattered everywhere—over the valleys and on the mountain sides—from it can be written one of the most interesting chapters in the early history of mankind.* (Powell 1881, 75)

In other words, while Powell felt it "illegitimate" to interpret pictographs (figure 5) directly as a form of written history, he nevertheless felt they were of enormous importance and should be collected and analyzed precisely because they represent the beginning of a written language (exactly what the documentary claims Powell and others were attempting to hide) and a history could be derived by those who studied them. Powell was not attempting to suppress archaeological evidence but simply trying to subordinate theory to the collection of data.

Clearly, Powell got it wrong on some issues. For example, while he correctly noted that the "pictographs" produced by the civilizations of Mesoamerica were more "conventional" than those seen in North America, he incorrectly surmised that theirs wasn't a true system of writing. This error, however, does not warrant the implication made in the documentary that his goal was to suppress any evidence showing that the native people of North America were capable of developing civilization. Exactly the opposite is true. As a matter of fact, Powell worked to dispel the myth of a mound-building people distinct from Native Americans, a conclusion he based not on armchair theorizing but on masses of data from extensive American ethnological and archaeological fieldwork. It is incredible that anyone would suggest, as the producers of *Lost Civilizations* clearly do, that Powell "robbed" Native Americans of their history. This is one of the more egregious of several non sequiturs present in the documentary. Powell's purpose was to unite American archaeology and ethnology in the study of the mounds, not to suppress evidence. That is not to suggest that he did not have predispositions, opinions, and biases. Who does not? Yet Powell did as much as anyone at the close of the nineteenth century to make American archaeology and ethnology more exacting sciences. His critical comments on limitations attending the use of certain kinds of anthropological data still bear reading today.

Why Are Archaeologists Skeptical about Old World Visitors to the New World?

This brings us to a subject touched on only briefly in the documentary: the Norse settlement of North America circa 1000 CE. The clear implication in the documentary is that since it can be demonstrated that the Norse were here one thousand years ago, it is also possible that Middle Easterners were in the New World two thousand years ago.

In fact, before the 1960s, archaeologists were generally skeptical about claims of a pre-Columbian Norse discovery and settlement of the New World primarily because these claims were based not on material remains found in North America reflecting a pre-Columbian Norse presence but on the interpretation of historical documents—specifically, two Norse sagas (*Eric the Red's Saga* and the *Greenlander's Saga*), both of which had been committed to paper fully two centuries *after* the events discussed were supposed to have taken place.

Archaeologists, with a focus on material evidence, tend to subscribe to essayist Ambrose Bierce's definition of written history: "An account mostly false, of events, mostly unimportant, which are brought about by rulers, mostly knaves, and soldiers, mostly fools" (Bierce [1911] 2003). Essentially, material remains—the things people made, used, and then either lost or discarded—represent the gold standard in archaeological analysis. So, while the two aforementioned sagas claimed that lands to the west of the Norse settlements in Greenland had been discovered, explored, and briefly settled, most in the archaeological community were skeptical of taking the sagas literally without material evidence as confirmation.

This all changed when, in the early 1960s, artifacts and even structures unquestionably of Norse origin were found by archaeologists working in Newfoundland at the site of L'anse aux Meadows. Items such as a ring-headed bronze pin, a soapstone spindle whorl,

POWELL'S PURPOSE WAS TO UNITE AMERICAN ARCHAEOLOGY AND ETHNOLOGY IN THE STUDY OF THE MOUNDS, NOT TO SUPPRESS EVIDENCE. THAT IS NOT TO SUGGEST THAT HE DID NOT HAVE PREDISPOSITIONS, OPINIONS, AND BIASES. WHO DOES NOT?

iron boat rivets, and the remnants of turf houses were excavated, all in the clear context of the remains of an entire ancient settlement (Ingstad and Ingstad 2000). These material remains looked nothing like any that had been found at native sites but matched, in detail, objects found in known tenth- and eleventh-century Norse sites in Greenland, Iceland, and Scandinavia. Radiocarbon dates proved that the Newfoundland village had been occupied before 1000 CE, placing it in time roughly contemporaneous with the events described in the sagas. Subsequent research throughout northeastern Canada has revealed additional material evidence of a Norse presence there about one thousand years ago (Sutherland 2000). As a result, archaeologists now fully accept that the Norse came to the New World, explored, and, in some cases, settled there five centuries before Columbus.

The Norse example is an instructive lesson in assessing the underlying claim made by the *Lost Civilizations* documentary. It is, unfortunately, a lesson lost. If interlopers from the Middle East arrived in North America two thousand years ago, one would expect there to be abundant material evidence of their presence. If a handful of Norse explorers and settlers left behind recognizable elements of their material culture scattered across Canada, certainly a large contingent of Hebrews moving into Ohio and building the literally thousands of mound sites found there would have, just like the Canadian Norse, left behind villages littered with material objects diagnostic of their culture and easily distinguishable from that of the native people already there. Their material culture would be found abundantly virtually anywhere archaeologists—or, for that matter, anyone else—dig. They certainly would have left behind more than a handful of inscribed tablets. But there is no such evidence for the presence of Hebrews or any other Old World people in pre-Columbian Ohio. In this case we are confident in turning the old cliché on its head: here, at least, the absence of evidence is, indeed, evidence of absence.

Finally, we wish to make one additional point. It is not surprising that when individuals in the nineteenth century, for whatever reason, wished to convince their contemporaries that the mounds had been constructed by Middle Easterners, the most obvious and, to be frank, easiest way to attempt this was to manufacture fake artifacts, like the Newark "Holy Stones," with inscriptions on them. It would have been far more difficult (in reality, virtually impossible) to concoct entire sites with trash pits, house remains, and burials—all reflecting the morphology, artifact types, skeletons, and burial practices appropriate for and diagnostic of Hebrews dating to the first century. Let's not be too hard on the fabricators of these frauds, hoaxes, and forgeries; they did the best they could—and they're still fooling some people even today.

One additional category of evidence discussed in *Lost Civilizations* will be examined in the third article in this series: genetic data used to trace the origins of the Native Americans in general and the mound builders in particular. ■

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Bradley T. Lepper is the curator of archaeology for the Ohio Historical Society in Columbus, Ohio.

Kenneth L. Feder is professor of anthropology at Central Connecticut State University. He is a fellow of the Committee for Skeptical Inquiry and a SKEPTICAL INQUIRER consulting editor.

Terry A. Barnhart is professor of history at Eastern Illinois University in Charleston, Illinois.

Deborah A. Bolnick is assistant professor of anthropology at the University of Texas at Austin.

DISCLAIMER

We are well aware that a claim underlying the *Lost Civilizations* documentary—that the mound-building people of the American Midwest were migrants from the Middle East 2,000 years ago—may be informed by religious doctrine. It is our position in this paper, however, that whatever inspires this claim is not nearly as important as the fact that it is plainly wrong. As such, we will leave it to others to assess the role played, if any, by religion in shaping *Lost Civilizations* and focus instead on scientific evidence relevant to that claim.

Disputing 'Seven Deadly Medical Hypotheses'

Skeptical Inquirer
Proof of ESP? Not Quite.
James Alcock Critiques the Bem Experiments
Seven Deadly Medical Hypotheses
Questioning IV Nutrient Therapy
Stem Cells' Rough Ride
Strange Problems in the Wegman Report

The article "Seven Deadly Medical Hypotheses" by Reynold Spector, MD, in our March/April 2011 issue prompted considerable comment and controversy within the skeptical community. Several physician-skeptics wrote critical blog posts, and others let us know they were uncomfortable with much of what Spector had written and the certainty with which he expressed his conclusions. We invited four of the critics to submit short letters for this section. Reynold Spector then responds. —EDITOR

DAVID H. GORSKI

There's an old recurring *Saturday Night Live* sketch in which a Scotsman bellows, "If it's not Scottish, it's *crap*!" As I read Reynold Spector's "Seven Deadly Medical Hypotheses" (Spector 2010), I couldn't shake the image of him in a kilt roaring, "If it's not a randomized, double-blind clinical trial based on the hypothetical/inductive method, it's *deadly crap*!" Unfortunately, Spector fails to demonstrate convincingly why most of his seven hypotheses even merit the label "deadly." Sadly, Spector's overwrought application of the word *deadly* to hypotheses that are not even, by Spector's definition, "deadly" torpedoes what might have been a provocative exercise in skepticism. What is left are weak or erroneous conclusions based on dubious arguments.

Because there are so many questionable arguments in Spector's article, I will be forced to "cherry pick" a couple. More complete discussions of other examples can be found elsewhere (Gorski 2011a). His first Deadly Medical Hypothesis (DMH) is as good an example as any. Unfortunately, DMH #1 is not even a hypothesis at all but rather two opinions, the second of which is a straw man tacked on to allow Spector to gleefully attack both opinions as one: "Either the investigator does not need a specific hypothesis and/or can use an inadequate method to test the hypothesis."

Spector cites an editorial as support for the existence of this DMH (Glass and Hall 2008). However, although the authors of the cited editorial did make the provocative argument that in the age of genomic medicine specific hypotheses might not always be necessary anymore and that instead science can focus on answerable questions, nowhere do they advocate using "inadequate methods" to test hypotheses or answer questions. That is Spector's opinion, and the straw man that gives him the opening to attack "hypothesis-less" studies. Yet hypothesis-generating studies are very important to the process of discovery, because they are how we develop new lines of investigation that might one day come to fruition as useful treatments that can pass FDA muster, standards designed for a very late point in the discovery process.

It's a long and winding road from hypothesis generation to hypothesis testing to treatment to treatment validation. Most hypotheses fail and are forgotten, and even for those that succeed, the median time between first publication of a discovery or hypothesis and its validation in large randomized clinical trials ranges from fourteen to forty-four years (Contopoulos-Ionnidis et al. 2008). Compared to this, genome-wide association studies (GWAS) have only been in existence for a relatively short time. Ironically, Spector argues that GWAS should be replaced by "direct sequencing of the portions of the genome of interest, comparing patients with proper control subjects." That is exactly what is happening now (Berger et al. 2011) as next generation sequencing (NGS) techniques drive the cost of genome sequencing low enough to make such studies feasible. I also note that many of the assumptions behind GWAS that Spector dismisses are also assumptions behind—you guessed it!—next generation sequencing experiments of the sort that Spector apparently approves of. Right now, the National Institutes of Health is funding a huge initiative, The Cancer Genome Atlas (TCGA, see http://cancergenome.nih.gov), in which dozens of cancer genomes are being sequenced—without hypotheses!—generating numerous promising hypotheses to test, the results of which

might one day be true personalized medicine (which, by the way, was another of Spector's misguided not-so-deadly hypotheses).

Speaking of cancer, the most offensive DMH is the last one, namely that "from a public health perspective, cancer chemotherapy (chemo) has been a major medical advance." Note how Spector is careful to insert the phrase "from a public health perspective." This, too, is a straw man, as no one argues that chemotherapy is a major public health advance; rather it is an advance in the treatment of individual patients with certain kinds of cancer that respond to chemotherapy. I've discussed at length the slanted perspective inherent in this DMH, including its misleading characterization of chemotherapy (Gorski 2011a) and why we "haven't won the war on cancer yet" (Gorski 2011b). If Spector had simply written that chemotherapy, while capable of curing many hematologic malignancies and a handful of solid malignancies (such as testicular and anal cancer), does a poor job on its own of prolonging life in patients with inoperable solid malignancies, I would have had little argument with him. Apparently such a universally accepted conclusion wasn't provocative enough, however, so he declared chemotherapy an utter failure—from a public health perspective, of course!—ignoring cancers for which chemotherapy improves disease-free and overall survival and quality of life even when they are advanced (Venook 2005) and the usefulness of chemotherapy in adjuvant and neoadjuvant settings.

No doubt Spector thought he was being provocatively "skeptical." Unfortunately, most of his DMHs are neither deadly nor, truth be told, hypotheses. At worst, they are the sorts of dead ends that science eventually corrects, which is how science works. Apparently, Spector doesn't have the patience to deal with the messiness of science-based medicine.

David H. Gorski, MD, PhD, FACS
Managing Editor, *Science-Based Medicine*
Leader, Breast Cancer Multidisciplinary Team
Co-Leader, Breast Cancer Biology Program, Barbara Ann Karmanos Cancer Institute
Associate Professor of Surgery,
Wayne State University School of Medicine

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MARK CRISLIP

The article "Seven Deadly Medical Hypotheses" has fundamental flaws. The argument, as I understand it, is that medical researchers fail to use the hypothetical/deductive approach to decide upon research agendas and therefore waste a "vast quantity of resource to disprove them."

The argument as presented is circular. The author uses information from completed studies to prove the studies should not have been done in the first place. He fails to consider the state of knowledge at the time the studies were done and the cumulative nature of medical knowledge.

The author's criticism of Hormone Replacement Therapy (HRT) is an example of his reasoning and his ignoring the state of medical knowledge. The benefits and risks of HRT were discussed at length with patients and on rounds in the 1980s when I was a medicine resident. Are the benefits of HRT greater than the potential risk of cancer from estrogen? As noted at the time in assessing HRT risks:

> Hip fractures, Colles' fractures, and coronary heart disease, and breast and endometrial cancers are important conditions in postmenopausal women that might be influenced by the use of hormone replacement therapy. . . . A 50-year-old white woman has a 16% risk of suffering a hip fracture, a 15% risk of suffering a Colles' fracture, and a 32% risk of suffering a vertebral fracture during her remaining lifetime. These risks exceed her risk of developing breast or endometrial cancer. She has a 31% risk of dying of coronary heart disease, which is about 10 times greater than her risk of dying of hip fractures or breast cancer. These lifetime risks provide a useful description of the comparative risks of conditions that might be influenced by postmenopausal hormone therapy. (Cummings et al. 1989)

And the risk for cancer was uncertain, as discussed in a 1989 *New England Journal of Medicine* editorial: "Evidence that estrogen increases the risk of breast cancer has been surprisingly difficult to obtain" (Barrett-Connor 1989). In the 1980s the risks of HRT were uncertain and the benefits appeared considerable. I spent significant time convincing my mother, based on the information of the time, to take her Premarin.

At no time does Reynold Spector describe, based upon the information we had at the time, why evaluation of HRT, or the other deadly hypotheses, should not have been pursued. It is the data gathered from the present he uses to discredit the past. If he had used the hypothetical/deductive methods based on information known at the time, or better, information from today, to predict what was and what will not be worth pursuing, it would be more impressive. Hindsight is always 20:20.

Spector makes similar arguments for his other six deadly hypotheses. Well, one deadly hypothesis, five rejected hypotheses, and one opinion. The last hypothesis, "cancer chemotherapy (chemo) has been a major medical advance," which Spector declared false, is not a hypothesis generated by researchers but by the author's after-the-fact opinion, and he fails to recognize the benefits of failure.

The author states "when one dispassionately weighs the minimal prolongation of 'good' [the quotes around "good" demonstrating there is nothing dispassionate in the author's analysis] life in patients with metastatic cancer . . . versus the very distressing side effects of chemotherapy with 'targeted' chemotherapy drugs, the case is close."

If it had been 1990, Spector could have been writing about AIDS and HIV therapy. AIDS is infinitely simpler than cancer, yet a decade of false starts and dead ends, of failed hypotheses, led to progressive understanding of the pathophysiology and treatment of HIV and resulted in the era of HAART, where the expected life expectancy of those with HIV is often close to normal.

Medicine advances slowly and erratically, and unfortunately more insights are often gained from failure than success. Only after enormous effort can we retroactively identify which medical interventions warranted the gold standard, large, randomized, placebo-controlled trials demanded by Spector. Doing so prospectively is not as easy as he suggests.

Medicine is pushed forward not by pseudoscientists and worse but by caring, hardworking, and committed health care professionals who are doing the best they can under often tight funding limitations and great uncertainty. Spector's dismissive attitude toward the blood and sweat expended by the researchers—and, often forgotten, the patients who volunteer their life and health to advance medicine by participating in clinical trials—is disappointing.

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Mark Crislip, MD
Editor, *Science- Based Medicine*
(www.sciencebasedmedicine.org)

AVRUM Z. BLUMING and CAROL TAVRIS

In the May/June 2010 issue of the SKEPTICAL INQUIRER, we published "The Alarms of Hormone Replacement Therapy: Are They Supported by the Data?," which criticized the headlines proclaiming that HRT significantly increases the risk of breast cancer. Readers might understandably be puzzled by the discrepancy between our perspective and that of Reynold Spector's "Deadly Hypothesis Two," in which he says that it is a "well-documented fact that estrogen is a carcinogen and causes breast cancer." To support this claim, Spector relies on the findings of the Women's Health Initiative (WHI). But the WHI is one of the studies we criticize in great detail, showing that its findings regarding breast cancer have been inconsistent. Virtually all of its alarmist conclusions—that HRT increases the risk of dementia, stroke, cardiovascular disease, breast cancer, and even "deaths from all causes"—were a result of selection bias or *post hoc* statistical manipulation.

Is estrogen the carcinogen that Spector so unequivocally thinks it is? Our paper reviews the mounting evidence that questions this common wisdom. Even the WHI results have not supported that association, finding a modest (and usually statistically nonsignificant) rise in relative risk only for the combination of estrogen-progestin therapy. In fact, a recent reanalysis of updated WHI data reported that postmenopausal administration of estrogen alone *decreases* the risk of subsequent breast cancer.

Of course, scientists and other skeptics can and do disagree with one another when it comes to interpreting data. Our primary objection to Spector's discussion of HRT is not his conclusion but his tone of certainty, his oversimplification of an enormous body of research, and his unwillingness to question received wisdom from the WHI. Even some investigators who share his belief that the relative risks of HRT warrant concern acknowledge that the *absolute* risks from this treatment are small. In one worst-case analysis, researchers calculated that a fifty-year-old woman taking estrogen and progestin for ten years has a 96 percent chance of remaining free of breast cancer versus 98 percent if she does not take HRT.

We refer interested readers to our SI article and its longer, more detailed version, "Hormone Replacement Therapy: Real Dangers and False Alarms," *The Cancer Journal*, March/April 2009, pp. 93–104. This paper contains 210 references and a timeline of studies on HRT from 1942 to the present. The free, full-text article is available online at: http://journals.lww.com/journalppo/Fulltext/2009/04000/Hormone_Replacement_Therapy__Real_Concerns_and.1.aspx.

Avrum Bluming, MD
Oncologist, hematologist, internist
Former clinical professor of medicine, University of Southern California

Carol Tavris, PhD
Social psychologist, writer, and lecturer
CSI fellow, Los Angles, California

HARRIET HALL

When I first skimmed Reynold Spector's article "Seven Deadly Medical Hypotheses," I found myself agreeing with most of his points yet feeling somehow disturbed. On a closer reading, I realized my discomfort was because he sounds more like a denialist or a contrarian than like a judicious skeptic. His seven hypotheses are stated in words that subtly misrepresent the

truth, and he attacks them with dogmatism where nuance is called for.

His main thesis is that "many medical and nutritional hypotheses are ill-conceived." That may be true, but scientists are doing the best they can. Does he imagine that they could somehow discipline themselves to only study hypotheses that will turn out to be true?

After falsely characterizing hormone replacement as an avoidable error, he perpetuates the myth that HRT kills 5,000 women yearly from breast cancer. The Women's Health Initiative (WHI) study showed no difference in overall mortality; so if HRT killed 5,000 women from breast cancer it would have to have saved another 5,000 from other causes of death.

Deadly Hypothesis Four is that "screening tests beyond the standard medical examination are necessary for identifying disease or the risk of disease in apparently healthy, asymptomatic adults." The utility of screening tests is not an ill-conceived hypothesis, much less a deadly one. A routine history and physical on an asymptomatic patient are next to useless for detecting pre-symptomatic disease or risk of disease. That's why we have tried to devise useful screening tests to diagnose certain diseases and risk factors before symptoms develop, so early treatment might have a chance of altering the course of disease. No screening test was ever adopted without credible data and plausible reasoning. It is a gross oversimplification to call "screening tests are necessary" a false hypothesis. Instead, Spector should have attacked the myth that screening tests are categorically good and always save lives. Sometimes they fail to improve patient outcomes or even do more harm than good, and we then abandon them. All the tests Spector questions (mammography, PSA tests, genetic screening) were first questioned in the very medical literature he disparages.

What Spector characterizes as "a chronic scandal" is nothing of the sort. It is a reflection of the complexity of the scientific process. Yes, we need to be more skeptical. We need to carefully evaluate the evidence for any medical claim. We need to do better-designed studies. But it's not always possible to do the ideal study; sometimes we have to go by the best available evidence from epidemiologic and other less desirable studies. We had to figure out that smoking caused lung cancer without forcing subjects to smoke or not smoke in a randomized controlled prospective study.

Spector's article was doubly disappointing because he had so many excellent points that were sabotaged by the way he presented them. Medical science is far from perfect, but it is a cooperative, self-correcting endeavor that constantly criticizes itself and is constantly improving. We need continued rational skepticism and constructive dialog, not oversimplified contrarian polemics.

Harriet Hall, MD, "The SkepDoc"
Editor, *Science-Based Medicine*
Contributing Editor, Skeptical Inquirer
CSI fellow
Contributing Editor, *Skeptic* magazine

REYNOLD SPECTOR Responds

It is clear from reading these letters that the correspondents do not understand how to evaluate the medical literature—how to discriminate the wheat from the chaff. They do not understand the hierarchical nature of proffered evidence. For example, I doubt any of the correspondents understand Hill's criteria for assessing causal relationships in epidemiology/observation studies (see below). I recommend they read Spector and Vesell (2006) or the online methodological supplement to my paper on nutrition in Skeptical Inquirer (Spector 2009). They should also consult the FDA regulations for what constitutes proof in drug development.

Let me be concrete. Three correspondents claim I don't understand that the evaluation of clinical science is not easy. Gorski talks about the "messiness of science-based medicine." Crislip states "medicine advances slowly and erratically." Hall states that "scientists are doing the best they can." What they do not understand is that one of the reasons for this sorry state of much of the clinical literature is that many published studies do not have a clear hypothesis, are underpowered, or use inadequate methods (e.g., epidemiology/observation studies attempting to "prove" causal connections). Examples include the hundreds of epidemiology/observation studies on hormone replacement therapy (HRT) (see below) or megavitamin therapy (Spector 2009), most of which yielded incorrect or inconclusive results and essentially none of which satisfied the Hill criteria for validity (Spector and Vesell 2000; 2006). Genome-wide association studies, or GWAS, are another example. We have known for decades how to do good clinical science, but the methodologies are often not followed for reasons previously enumerated (Spector and Vesell 2002); flawed studies are published and confusion reigns. Much of the confusion could be eliminated by practicing valid science. The notion that all these unscientific studies are hypothesis-generating is ludicrous.

Bluming and Tavris challenge the notion that HRT increases breast cancer in post-menopausal women. Let me give a broad overview of the multifaceted and overwhelming data that supports the view that HRT causes human breast cancer:

1. Estrogen causes cancer of the breast in female animals.
2. Unopposed estrogen causes cancer of the uterus in humans with a risk of up to twenty times more than average. That is why unopposed estrogen is not given to any woman with a uterus.
3. The Women's Health Initiative (WHI) and then the Million Woman Study (Beral et al. 2011) both showed that HRT in women with a uterus increased breast cancer by 40–90 per-

cent. The longer the use and the earlier the start of HRT, the higher the risk of developing breast cancer.

4. The Million Woman Study also showed about a 40 percent increase in incidence of breast cancer for hysterectomized women who took estrogen for eight years (Beral et al. 2011). The much smaller WHI study of unopposed estrogen was stopped early because of increased strokes for women on estrogen. The women in that study were on estrogen for only three and a half years, and the results are inconclusive (Jungheim and Colditz 2011).
5. After the publication of the WHI study on HRT, the use of HRT fell precipitously and soon after breast cancer incidence declined, consistent with HRT causing breast cancer (Beral et al. 2011).
6. Anti-estrogens in post-menopausal women decrease breast cancer incidence by a whopping 60–80 percent (Goss et al. 2011).
7. The International Agency for Research on Cancer considers HRT (either unopposed estrogen or estrogen/progesterone combinations) human carcinogens (cancer causing agents) (Jungheim and Colditz 2011). So do the FDA and U.S. Supreme Court.
8. The labeling of HRT, approved by the FDA, recommends HRT for the shortest possible time at the lowest possible dose.
9. Bluming and Tavris concede that in a worst-case scenario, there might be a 2 percent increased risk of breast cancer in women on HRT for ten years. This amounts to two hundred thousand more cases of breast cancer per ten million women on HRT for ten years. At the peak of HRT use, many times more women were taking HRT. What are Bluming and Tavris thinking?

Crislip writes an apologia for why, before the definitive studies of HRT began to be published in 1998, physicians used HRT broadly. I find his argument unconvincing—in fact worrisome. First, we have known for decades that estrogen causes breast cancer in animals and cancer of the uterus in women. There was also substantial data suggesting but not proving that HRT causes breast cancer in women. Second, the FDA wisely rejected (in the 1990s) the manufacturer's claims that HRT decreased cardiovascular and central nervous system disease. These claims were based on epidemiology/observation studies, but they didn't meet the Hill criteria and turned out to be wrong. The FDA approved claims only for HRT decreasing post-menopausal symptoms and fractures. The FDA wisely ignored the unbridled industry-driven hype, unlike many gullible physicians. Third, there were many HRT skeptics, including this correspondent (Spector and Vesell 2000) and National Institutes of Health Director Bernadine Healy, who began the WHI studies in 1991 to answer the HRT questions definitively. Now, twenty years later, we know that HRT causes breast cancer, strokes, clotting, uterine cancer (with use of unopposed estrogen), cardiovascular disease, and so forth. HRT should not be used chronically; excellent nonhormonal ways to prevent fracturing have been available since 1996.

In fact, I believe a good physician should use only proven therapies for which the risk/benefit ratio favors the patients. That was never the case with HRT, a known carcinogen. Fortunately, when my sister asked me if she should take HRT for her menopausal symptoms in the mid-nineties, I said no; it's too risky and its benefits are uncertain. I also wrote about this over ten years ago (Spector and Vesell 2000).

To answer the questions on cancer chemotherapy, I recommend my SKEPTICAL INQUIRER article "The War on Cancer" (Spector 2010). Moreover, the problems with chemotherapy keep surfacing. For example, it was shown that for lung cancer patients, hospice care with minimalist chemotherapy was better than standard chemotherapy in terms of both quality of care and longevity (Temel et al. 2010). The scandals associated with the so-called targeted chemotherapy—such as the ineffective, incredibly expensive, and risky Avastin in breast cancer treatment—escalate (Tucker 2011). Finally, the authors of a recent long, thoughtful article (Smith and Hillner 2011) argue persuasively, as I did, that there is tremendous overuse of chemotherapy. The authors point out that "some oncologists choose chemotherapy in order to maximize their practice income. A system in which one half the profits in oncology [practice] are from drug sales is unsustainable." Where is the well-being of the patient in this? A thoughtful, empathetic reader will weep.

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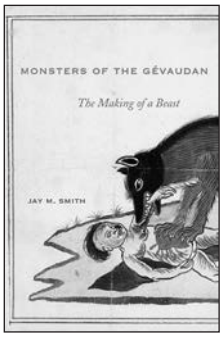
Reynold Spector, MD
Clinical Professor of Medicine, Robert Wood Johnson Medical School (New Jersey)

Slaying the Beast of the Gévaudan

BLAKE SMITH



Monsters of the Gévaudan: The Making of a Beast
By Jay M. Smith. Harvard University Press, Cambridge, Massachusetts, 2011.
ISBN: 0674047168. 392 pp. Hardcover, $35.

There are many legendary monsters, but very few of these bear the onerous burden of the phrase *based on a true story*. Of these few, perhaps no monster has inspired more wild speculation than the creature that terrorized France in the 1760s—a monstrous killer that was responsible for perhaps more than a hundred deaths. As a skeptical investigator of such mysteries, I have had a long fascination with this animal—often referred to as the Beast of Gévaudan, or in French as *La Béte*. I had it in mind to do a lengthy investigation of the historical basis for the creature when I found that Jay M. Smith's new book, *Monsters of the Gévaudan*, has rendered such an exercise moot.

Far more than a monster story, Smith's book breaks down the tale of imperiled villagers and impotent public and military responses to the threat within the geopolitical context of France's position after its devastating loss to England in a war that effectively stripped away much of the empire's military clout and standing in the world. This is no simple story of villagers being wiped out by animal attacks. Instead, Smith shows that the lurid story of *La Béte* is perhaps one of the first examples of media frenzy creating a monster far more spectacular than its likely mundane basis. (If hapless villagers being torn to pieces by animals can be considered mundane—and Smith makes a pretty good case that it could be at the time.) But not only does the book give us the social context, it also demonstrates how the politicians, clergy, and aristocrats of the region attempted to utilize the beast's attacks for their own political gain.

So many books have been written about *La Béte* that it is difficult to tease out the facts; even at the time the creature(s) were killing people, the reports described very conflicting details. The clergy at the time bemoaned the loose morals of young people and urged everyone to get back onto a stronger moral track, or else the attacks would continue. Local politicians tried not to look inept in the face of this dire threat and formed hunting parties to try and run the animal to ground. Amateur zoologists speculated wildly about what the true nature of the animal could be. Broadsheet newspapers printed lurid details of the killings as well as various pieces of fantastic art describing the beast and its supernatural antics.

Moreover, as the nascent popular press ran its stories of the beast and the failed attempts to protect the region from attack, local would-be heroes and hunters from other parts of France discovered the perils of bad publicity.

Throughout the past century, the overwhelming question about *La Béte* has been *what was it*? At the time, guesses about the creature's identity ranged from wolf to bear to hyena. A werewolf was also suggested. The "Jack the Ripper" killings of the late 1800s affected the *La Béte* tale by prompting the theory that the killings were performed by a serial killer. Smith does a good job of summing up the problem with this kind of modern interpretation of the legend outside of historical context: "In the case of the beast, the gradual decontextualization of its story meant that it eventually became available for 'recontextualization' in new narrative genres that reflected contemporary concerns or offered the possibility of entertaining reinterpretation of a story with fantastic appeal" (264).

Smith's book also does a fantastic job of retelling the story of *La Béte* within its historical context. His passion for that period of French history is apparent in the way he makes these characters and their motivations clear to modern readers. But what about the big question? What *was La Béte*?

In the opening Smith makes a very compelling case that the terrorizing monster was a pack of wolves that had become unafraid of people. This isn't a book about solving the mystery of what particular animal was responsible for these killings. Instead it explains that such killings were not even rare events

because a convergence of new technologies, economics, politics, and weather led to an environment where people were vulnerable, and carnivorous animals in a famine region took advantage of the situation by eating humans. After all, with the emergence of European tales of the "big bad wolf," it would be quite surprising if wolves *never* posed a danger. Smith points out that far from being innocuous, wolves were probably responsible for hundreds to thousands of deaths in the previous century to the killings of *La Béte*:

> The threat was ubiquitous. Rabies-infected wolves claimed well over a thousand French lives in the early modern centuries, and in spite of the modern "dogma" that healthy wolves never attack humans, man-eating wolves unhampered by disease killed at least 1,875 people in these same years. Because of huge gaps in the administrative records before the nineteenth century, Moriceau is inclined to put the true number of human fatalities in the early modern period closer to a staggering 9,000." (12)

Combining details of the killings, character sketches of the aristocrats and hunters who sought to kill the beast, and modern analysis of how the legend itself has morphed over time, this book provides the answers to most of the questions I had about the case. Yes, there really were killings; yes, there really were animals to blame; and no, it probably was not a hyena or a werewolf that was responsible for the many gruesome deaths. But even knowing the culprit was a natural animal, the tale of the developing legend is still fascinating.

If you enjoy mysteries and history, this book has much to offer. While the tragedy of the deaths this creature caused may have diminished over the past two centuries, this book does a great job of giving context to the killings and their rise to infamy a more poignant and understandable story than I've previously encountered. This book is a must-have for monster enthusiasts, media buffs, and Francophiles. ■

Blake Smith is a skeptical researcher, web programmer, and cohost of the *MonsterTalk* podcast (www.monstertalk.org).

NEW AND NOTABLE]

Listing does not preclude future review.

THE BIG BOOK OF UFOS. Chris A. Rutkowski. Not an encyclopedia but indeed a big book of UFOs, covering a useful chronological overview of reports by decade, along with more in-depth discussions of abductees, conspiracies, and a significant section on skeptics, including Phil Klass and CSI. Dundurn Press, 2010, 386 pp., $19.99.

HEAVEN IN THE AMERICAN IMAGINATION. Gary Scott Smith. Smith examines how Americans (both historically and presently) interpret and imagine heaven, drawing upon art, psychology, folklore, poetry, fiction, and other sources. Oxford University Press, 2011, 338 pp., $29.95.

LEGENDS OF THE FIRE SPIRITS: Jinn and Genies from Arabia to Zanzibar. Robert Lebling. A well-written and fascinating survey of folklore about genies around the world; from ancient pre-Islamic legends to modern interpretations. Counterpoint Books, 2010, 298 pp., $16.95.

LONE STAR SPOOKS: Searching for Ghosts in Texas. Nate Riddle. An examination of Texas ghosts and hauntings, including some first-hand research and a significant section on skeptical research and methodologies. Schiffer Publishing, 2011, 160 pp., $16.99.

PAYBACK: Why We Retaliate, Redirect Aggression, and Take Revenge. David Barash and Judith Lipton. Evolutionary biologist Barash and psychiatrist Lipton examine revenge in humans and other animals—why we do it, the different forms it takes, and the consequences. Oxford University Press, 2011, 209 pp., $24.95.

MARGARET MEAD: A Biography. Mary Bowman-Kruhm. A succinct biography of the famous anthropologist traces her life and career, providing many interesting details and some new material. It concludes with an assessment, a discussion of the various criticisms and controversies generated by her work, and speculations on what she would say about today's cultural landscape. Prometheus Books, 2011, 199 pp., $17.

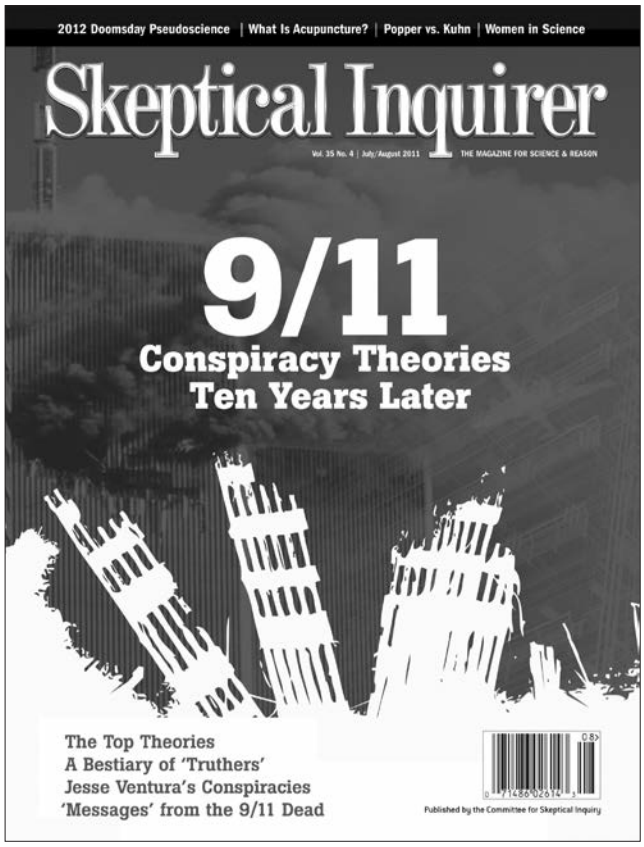
PERFIDIOUS PROVERBS AND OTHER POEMS: A Satirical Look at the Bible. Philip Appleman. An award-winning poet and writer presents poems written over a period of thirty years in the conviction that satire is perhaps "our most effective way of lighting candles in the darkness and communicating effectively to those who are immune to reason." Prometheus Books/Humanity Books, 2011, 140 pp., $14.

THE PRACTICAL PSYCHIC: A No-Nonsense Guide to Developing Your Natural Intuitive Abilities. Noreen Renier. Renier, the career psychic detective whose claims have been discussed (and often debunked) in these pages, offers advice on how average folk can be psychic; her "exercises" and tests are especially revealing for their lack of scientific rigor. Adams Media, 2011, 246 pp., $14.95.

SEEKING THE TRUTH: How Science Has Prevailed over the Supernatural Worldview. Richard H. Schlagel. In this sweeping intellectual history, the Elton Professor of Philosophy Emeritus at George Washington University reconstructs the tremendous achievements of science, showing how it has brought fundamental conceptual revolutions "in contrast to the archaic, reactionary" nature of religions. Prometheus Books/Humanity Books, 2011, 518 pp., $39.

PSYCHIC VIBRATIONS: Skeptical Giggles from *The Skeptical Inquirer*. Robert Sheaffer. Illustrations by Rob Pudim. A highly welcome collection from Sheaffer's long-running column in SI (nicely illustrated with Rob Pudim's humorous drawings), taking amusing and acerbic looks at alien antics, implausible science and medicine, psychic powers and predictions, astonishing animals, doomsdays and conspiracies, the sacred and the profane, and a final category, "beyond description." Create Space (available on Amazon.com or, at a discount, via the author's blog, BadUFOs.com). 2011, 319 pp., $19.95.

—Benjamin Radford and Kendrick Frazier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Skeptical Inquirer
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THE MAGAZINE FOR SCIENCE & REASON
9/11
Conspiracy Theories
Ten Years Later
The Top Theories
A Bestiary of 'Truthers'
Jesse Ventura's Conspiracies
'Messages' from the 9/11 Dead
Published by the Committee for Skeptical Inquiry

9/11 Conspiracy Theories: Ten Years Later

I would like to thank you for your fine article on 9/11 (Dave Thomas, "The 9/11 Truth Movement: The Top Conspiracy Theories a Decade Later," July/August 2011). I have struggled for years looking for a solution as to why the towers fell and had a hard time believing the planes brought them down. I also had a hard time believing explosives were set at the base of the towers because the collapse seems to occur story by story. Your anatomy of the WTC collapse makes more sense than anything I have read on the subject. Outstanding article. Thanks again.

Richard E. Browning, PE
rbrowning@industrial-tech.com

Dave Thomas's very specific anatomy of the collapses at the World Trade Center was absorbing.

I do have a couple of questions. If the planes loaded with jet fuel had entered the buildings diagonally, would the buildings have toppled in the direction of the weakened corners instead of falling on their footprints, thereby causing far more damage to the surrounding area?

Something else I've wondered ever since the event: Was there not even one architect or structural engineer somewhere in the country who could see that the risk of collapse was such that those 343 firemen needed to get out of there?

Don Keith
Waterloo, ON, Canada

I found it easy to dismiss the demolition theories without requiring analytical refutation. These theories introduce far greater problems to address than anything they purport to solve. It seems the "mastermind" would almost certainly have to be the president of the United States. What would we do to such a president if he were found out? Clearly he would have to believe that absolute secrecy could be maintained forever. We can't even keep secrets in the CIA! Many people would have to be involved over an extended time period: demolitions experts, hijackers, FBI and Interpol investigators, etc. What if one of the WTC aircraft hijackings had been thwarted by passengers as in the case of Flight 93? One of the towers would still be standing with demolitions evidence that would have to be removed. Even a flight cancellation or delay would have created havoc. What if WTC 7 hadn't caught fire? Certainly this could not have been guaranteed. Would they have proceeded with the demolition? What if the demolition triggers failed due to damage from the aircraft? The list could go on for pages. All of this so we could go to war in Afghanistan? Give me a break!

Robin McMeeking
Pinckney, Michigan

As I read Bartlett and Miller's article on the 9/11 Truth movement ("A Bestiary of the 9/11 Truth Movement: Notes from the Front Line," SI, July/August), it occurred to me that the more extreme and ridiculous 9/11 Truther claims are themselves a government conspiracy to discredit the more plausible claim that the government chose to invade Iraq and steal the second largest reserve of oil in the world.

But, hey, I'm probably just one of those conspiracy nuts.

R. Allen Gilliam
Winter Park, Florida

I just read Dave Thomas's 9/11 Truth movement article. Good stuff. I don't hold a brief for the conspiracy seekers, but I think he may be wrong on one point. I thought I'd call it to your attention before one of the Truthers brings it up to try to discredit your effort.

On page 38 Thomas says, "Thermite is simply not practical for carrying out a controlled demolition, and there is no documentation of it *ever* having been used for that purpose." In fact, there was one.

In 1933–1934 Chicago held a World's Fair, themed "A Century of Progress." One of the attractions was something called "The Sky Ride." Two 600-foot-tall towers supported cars which passengers rode between at the 200-foot level.

After the Fair completed its run the towers were razed. The West tower was brought down by dynamite, the East by thermite. Look at the Wikipedia entry for the Sky Ride.

I lived in Chicago in the 1940s and visited the park that was once the fair grounds many times. One of the tower stumps was still there.

Aside from that, a very good article.

Joe Ferrari
White Plains, New York

If I could say one thing to the 9/11 Truthers, it would be this: Remember that the *official* explanation for 9/11 is itself a conspiracy theory. There, now, aren't you happy?

Richard S. Russell
Madison, Wisconsin

Thank you for the great article "A Bestiary of the 9/11 Truth Movement: Notes from the Front Line." The authors' dissection of the people who are involved in the 9/11 Truth movement and their backgrounds, motivations, and the roles they play is truly eye-opening. It answers some of my puzzlement and bewilderment over seemingly educated, intelligent, and competent people (such as the Architects and Engineers for 9/11 Truth group) who can be so willfully and deliberately ignorant. The biggest among the three groups described by the authors is the "illiterati," whose "contributions, almost entirely devoid of genuine intent to find truth, are almost always nakedly and transparently propagandistic" and whose membership is "as much a social and recreational

pursuit as an exercise in critical inquiry."

Under this definition, I find that "illiterati" are everywhere in our society, not just confined to the conspiracy theory circle. You can find them in the comments section of any article published online. Some high-profile, highly charged topics generate hundreds or even thousands of comments. In a random sampling you will find that only a few of the comments are thoughtful, fair, and even-handed. Most express a point of view entirely filtered through the narrow, sometimes radical, prism of the commenter's worldview. Some are ramblings seemingly unrelated to the article, and some are emotional outbursts; some are obviously written by people who never actually read the article. They attack, belittle, and insult the author and the other commenters. There is no intention or even pretense to engage in constructive debate to forward and share ideas. The "illiterati" are everywhere. It's quite depressing!

Mio Sam Lao
Princeton, New Jersey

SI readers should be aware that Dave Thomas's critique of my analysis of the destruction of WTC 1, the North Tower of the World Trade Center, is based on assumptions that have no observational or experimental basis. He achieves his large forces by postulating a series of unobservable, high frequency micro-jolts, not detectable with the frame rate of an ordinary video camera. As a reality check, I have done a video analysis, titled "What a Gravity-Driven Demolition Looks Like" (see www.911speakout.org), showing a known, purely gravitational demolition. In that demolition, as the upper section of the building impacts the lower section, there is significant, measurable, macroscopic deceleration of the falling section, just as one would expect. However, in the case of WTC 1, deceleration is noticeably absent. There was no deceleration because there was no significant impact, because 90 percent of the resistance was being eliminated by other means.

The problem is not that I (or my peer reviewers) don't know the difference between static and dynamic loads. The problem is that Dave Thomas, and the editors of this magazine, have made the *a priori* decision to defend orthodoxy in the name of skepticism and heap scorn on the true skeptics of the blatantly ideological official myth of 9/11.

David Chandler
davidchaler@gmail.com

Dave Thomas replies:

I appreciate Richard Browning's kind remarks.

Don Keith asks some good questions. The consensus is that even if there was some tilt at the start of the tower collapses (and there was), any asymmetry in the collapse of the first panels would quickly be obliterated with the increasing downward pace of the gravitational avalanche. The Towers' failure mechanism caused them to fall down on an area somewhat larger than their footprints, rather than falling over like a felled tree. As regards advance warning of the tower collapses, there was at least one failed attempt. This incident is nicely summarized at the Screw Loose Change *blog (search on Ganci). Briefly, before the collapses, an "engineer type person" warned NYFD Battalion Chief John Peruggia that the buildings were in imminent danger of collapse. Peruggia promptly dispatched EMT Zarillo to warn Chief Ganci at the command post across the street from WTC 1. Zarillo told Ganci about the collapse danger, but Chief Ganci only had about enough time to say "Who the f___ told you that?" before WTC 2 collapsed.*

Joe Ferrari's good correction regarding a real thermitic demolition of a radio tower from Chicago's 1933–34 World's Fair is appreciated. It did happen, and it was documented in the November 1935 edition of Popular Mechanics. *You'd think that 9/11 thermite advocates like Steven Jones or Niels Harrit would be interested in a real thermitic collapse, but 9/11 Truthers have simply ignored this new and relevant information. That's probably because the real thermitic demolition required thousands of pounds of thermite for just a small radio tower—how much would have been needed for the Twin Towers and WTC 7?*

David Chandler argues that my explanation for the towers' rapid (but not "free fall") collapses is flawed because it was based on assumptions with "no observational or experimental basis," and that I postulated a "series of unobservable, high frequency micro-jolts, not detectable with the frame rate of an ordinary video camera." That is not correct. I based my model on common knowledge and the laws of physics. I used the height and mass of tower floors, the stiffness of tower columns and supports, and the principle of conservation of energy to estimate the dynamic forces applied by the falling upper sections. I applied the law of conservation of momentum to calculate the drop in speed due to the resistance of each floor panel throughout the collapses. I used these speed changes, and Newton's Second Law of Motion, to deduce collision times for each floor panel, and calculated (not "assumed") that these were brief, on the order of a few milliseconds in my one-dimensional, simplified analysis. If the frame rate of the video Chandler used was far too large to see the rapid and subtle velocity changes predicted by my model, that is not the model's fault.

But the biggest mistake Chandler makes is to state that there is no observational support for my model, which explains how the collapsing towers encountered considerable resistance, making them fall at less-than-gravitational accelerations. My model predicts that the early collapses were at 2/3 g and the final stages at 1/3 g. There is observational confirmation of my model, from measurements of the fall of WTC 1 showing that the acceleration for the first few seconds was effectively 2/3 g. Who provided this confirmation? David Chandler.

My detailed explanation of all this has been available to David Chandler since August of 2010 at www.nmsr.org/nmsr911c.htm. That he concludes his response to Skeptical Inquirer *with non-scientific polemics is most revealing.*

What Is Acupuncture?

In "What is Acupuncture?" (SI, July/August 2011) Novella makes it clear he has no love for acupuncture, but I think he misses some important positives for acupuncture in his analysis. First, as he accurately points out, acupuncture is quite likely not Chinese in origin. Otzi, the five-thousand-year-old European who melted out of an Italian Alpine glacier, has what appear to be acupuncture points tattooed on his skin. This is very early science—a systemic view of healing long before humans understood the circulatory system or nervous system. Whether they had it right or not, healers were plotting what appeared to be complex relationships between symptoms and various non-local areas of the body and were quite precise about it.

Second, while Novella finds only two studies among the great number of acupuncture studies that meet his criteria as showing no bias, this criticism can be applied to the majority of clinical studies. But the meta-analysis provided by WHO (*Acupuncture. Review and Analysis of Reports on Controlled Clinical Trials*, Xiaorui Zhang, Acting Coordinator, TRM & EDM World Health Organization) shows that for many conditions, acupuncture is significantly more effective than conventional medical treatment. In fact, in the German study that Novella cites (M. Haake et al.'s "GERAC for Chronic Low Back Pain") both real and sham acupuncture were more than twice as effective as conventional treatment in reducing low back pain. (Real acupuncture was slightly more effective than the sham version.) Placebo or not, acupuncture works.

Robert Veitch
Minneapolis, Minnesota

Steven Novella, MD, replies:

Veitch makes a number of incorrect statements in his response to my acupuncture article. First, he characterizes what was being practiced five thousand years ago (whether acupuncture or not) as science. However, there is nothing in the historical record of any culture to indicate that scientific methods were being employed at that time. Veitch confuses "complex" and "precise" practices with scientific practices. However, there are many examples of complex, elaborate, and precise disciplines that are completely fabricated and devoid of any real science, such as astrology. In fact, the analogy is appropriate, as the origins of acupuncture are closely tied with astrological beliefs.

Further, I never claimed there are only two studies of acupuncture devoid of bias. There are many good studies, but there are far more very poor-quality studies. The WHO meta-analysis is highly criticized as being political and misrepresenting the evidence. A recent and rigorous review of systematic reviews of acupuncture (E. Ernst, M.S Lee, and T.Y. Choi's "Acupuncture: Does It Alleviate Pain and Are There Serious Risks? A Review of Reviews, Pain, *April 2011) shows that research has failed to demonstrate that acupuncture is effective for any pain indication. It is essentially an elaborate placebo.*

Finally, Veitch misinterprets the Haake back pain study (which is not surprising—most of the media also did). The study was not designed to compare acupuncture to conventional treatment. Patients were selected who had already failed whatever care they were receiving, and in that arm of the study they continued their already-failed care. They were not given any conventional treatment as part of the trial. Their group assignment was not blinded, and their outcome was used only as a baseline. The only blinded comparisons in the study—among true, sham, and placebo acupuncture—showed no significant difference. In other words, acupuncture does not work.

Popper, Kuhn . . . and Ziman

Thanks to Massimo Pigliucci for his column about "Popper vs. Kuhn," which brought up many interesting issues (SI, July/August 2011). The point he made that "science works well precisely because there is a division of labor" between "puzzle solving" and "criticism" is particularly intriguing.

Some years back I taught a college course called "Technology and Human Values." On my required reading list was *Public Knowledge: An Essay Concerning the Social Dimension of Science* by John Ziman (Cambridge University Press, 1968). Of course, Ziman wrote many fine books about what science is and how it's done. Still, his exploration in *Public Knowledge* of the concept that "science is public knowledge" offers many valuable insights into how science works in the real world.

Ziman's definition branches off into many fruitful areas, with the notion of a scientific consensus—a social factor—at the core. The concept offers key insights into how scientists are trained, the interplay between scientific claims and challenges, and many other elements within the scientific community. Pigliucci's "division of labor" clearly functions within that community.

Ziman's long essay sparked many valuable class discussions about the nature of science. I highly recommend it to those interested in a somewhat different "take" on the subject. (The book no longer seems to be in print, but many college libraries have copies.)

Evan E. Filby, PhD
Idaho Academy of Science

Women in Science

I was surprised that Kenneth W. Krause's otherwise excellent article "Women and High-End Science: Nurture or Nature, Prejudice or Preference?" ("Science Watch," SI, July/August 2011) failed to discuss the important influence of the lack of role models applying to women's (and minorities') choices concerning a scientific career. The psychological effect of never having seen a woman with a PhD in mathematics (and not seeing any papers by one until later in my career) was a strong negative during my time in graduate school from 1973–1978. Fortunately, another woman entered the PhD program at the same time, and we were office mates. Together we constituted 66.7 percent of the female enrollment in the mathematics PhD program at the University of California, Riverside, for most of my graduate career. My office mate graduated a year before I did and thus became the first woman with a PhD in mathematics I had ever known.

Both my office mate and I went through crises of doubt and serious considerations of quitting. I was able to buck her up at crucial times and she did the same for me. I think neither of us would have finished had the other not been in the program. When one is constantly being told how "weird" one is for pursuing such a "man's" field and how unlikely it is that one will succeed, it is really hard to persist and to have confidence in one's ability. I'm sure the experience of minority PhD students is similar.

The more women and minorities enter high-end science and advance in their fields, the more appropriate role models there are. So in the last thirty-eight years, there has been a great improvement in removing this psychological disincentive for women to pursue PhDs in science. In 1978, I was the first woman with a PhD in mathematics hired by my current university. Now fully half of my department consists of women with mathematics doctorates. All of my younger female colleagues had women as thesis advisors, too. Now all of our students have plenty of female role models to inspire them and make it seem natural for women to be in the field and to be respected for their contributions.

Thus I personally expect more women to pursue high-end science in the next twenty years, simply because the number of women in such careers is reaching a critical mass. It is now considered more normal and acceptable for a woman to be in such a career than it ever was before. That really matters for many women.

Lucy Dechene, PhD
Department of Mathematics
Fitchburg State University
Fitchburg, Massachusetts

Kenneth W. Krause replies:

Yes, as the new study from Ceci and Williams suggests, women have come a very long way in high-end science. But we should take care not to diminish the plight of our less fortunate predecessors. In the context of a discussion regarding the historical reality of true discrimination, vague and reduced complaints about the "psychological disincentive" of not seeing enough women around the university might ring hollow. Some women who have actually been victimized might even feel insulted, which I know was not Dechene's intent. And now, as Ceci and Williams also point out, we appear to be faced with a similar but opposite problem: "bias in favor of women." Discrimination against anyone on the basis of gender (or race), I would add, is categorically unacceptable.

That said, Else-Quest concluded in her earlier study that "girls will perform at the same level as their male counterparts when they are encouraged to succeed, are given the necessary educational tools, and have visible female role models excelling in mathematics" *(my emphasis). I wonder, though, if in order to be accepted according to one's individual merits, one would be well advised to think of him- or herself as an individual first, rather than as a member of any group.*

Séances and Sinkings

The assertion that Helen Duncan was prosecuted during World War II for illegally exposing the 1941 sinkings of the HMS *Barham* and HMS *Hood* cannot be entirely correct (Joe Nickell's "The Séances of 'Hellish Nell,'" SI, July/August 2011).

The loss of the *Barham* was revealed only after the war, via film footage (endlessly reused) showing the vessel rolling onto its side as its magazines blew up. The secrecy was feasible because after loosing its torpedoes, U-331 was too tied up avoiding being rammed and then depth charged to realize its success. That the *Barham* was a little-known, slow, ram-bowed, unmodernized World War I warship helped keep its terrible destruction under wraps.

The crew of the new *Bismarck* was entirely aware that after having lobbed just five salvos of twenty armor piercing rounds, they had blown up the "Mighty" *Hood*, a ship that had been the terror of war games despite being twenty years old. The Nazi propaganda machine wasted no time in informing the world that Hitler's fleet had sent the exceptionally handsome pride of the Royal Navy to the bottom. British authorities made no effort to hide the loss. Not acknowledged was Admiral John Tovey's gross error of dividing his powerful battle fleet of four battleships and battle cruisers into two weak divisions.

There was wide discussion in the press about how the national tragedy (too similar to the explosions that killed almost all aboard three battle cruisers at Jutland in 1916) could have happened, the common myth being that the *Hood* lacked sufficient deck armor. The real cause of the explosions was the dangerously unstable formulation of British gun propellant.

Gregory Paul
Baltimore, Maryland

Joe Nickell replies:
The bogus medium Helen Duncan was not actually prosecuted for exposing secrets but for violating the 1735 Witchcraft Act, although "it was said"—belatedly, *as I pointed out—that she had revealed the sinking of the* Hood *and* Barham.

Whereas Paul asserts that "The Loss of the Barham *was revealed only after the war" (i.e., 1945), a member of the HMS* Barham *association observes (confirmed by other sources) that it was otherwise. The sinking (which occurred on November 25, 1941) was "officially published" in January 1942. He suggests that survivors could have contacted relatives even before the official announcement and that "it was local knowledge at the time that the ship had sunk" (quoted by* BBC News*, online). As to the* Hood*, as Paul notes, "British authorities made no effort to hide the loss."*

Unfortunately (as I noted in my investigative article), there is an online petition calling for Duncan to be pardoned, but I believe only the misinformed and the gullible will sign it.

Religious, or Not?

I enjoyed Keith Taylor's forum column "Deliberate Ignorance" (SI, July/August 2011). However, I saw a statement I just had to check. On page 53, he says, "The last refuge for deniers of hard facts is religion; every congressman except Pete Stark of Oakland claims a belief in a supreme being." Until just a few years ago there were six members in the House who were listed as unaffiliated. Given the general attitude of many about atheists and agnostics, that seems like a sensible choice. There used to be five to eight members of Congress routinely listed as non-affiliated or unaffiliated (http://newsweek.washingtonpost.com/onfaith/faithfacts/2007/01/religious_affiliation_on_capit.html).

In the current Congress, none are unaffiliated, but there are five or six who refused to answer. That choice suggests something has changed in the assessment of the religious-political climate. Has this country become more intolerant of atheists and agnostics, or are we just hearing more people making an issue of religion when it should be considered as irrelevant to holding a public office? The proclamations seem to have no bearing on personal conduct and, for some, the public disgrace that follows.

Arthur R. Thomas
Gloucester, Massachusetts

Mumler's Ghost?

In the article "Photos of Ghosts" (SI, July/August 2011) Massimo Polidoro states photographer William Mumler died in 1884. Earlier in the article he discusses Mumler's photograph of the "crowd of mourners at the London Cenotaph on Armistice Day." Since the Cenotaph was completed in 1920 and Armistice Day originated on November 11, 1918, I guess it must have been Mumler's ghost that took that photograph.

E. A. Grens
Rio Vista, California

Immortality's Implications

Regarding the review "Escaping Mortality" by Daniel Grassam (SI, July/August 2011), I am always baffled by the proponents of life extension for humans who never seem to consider the practical implications of "immortality." Will these immortals be eating food, drinking water, driving cars, discarding trash, buying houses, and continuing to exploit the earth's diminishing resources? After they retire, will they be collecting pensions or Social Security for, let's see, *forever*? Our aging population is already putting enormous strain on the domestic (and world) economy and the environment, so how can we expect that an exponentially increasing number of people in a new leisure class will have anything but an overwhelmingly negative impact on the planet? Even a modest increase in life expectancy will necessarily and profoundly accelerate the growth of human population on the planet and the resultant crises of resource distribution and environmental damage that we have already begun to see. Unless we quickly find ways to cope with growing demands on our diminishing resources, there may not be any future generations to worry about this problem.

Don Mayer
Palos Verdes, California

Viewing the Past?

Werdegar's letter regarding Massimo Pigliucci's column "On Time Travel" (Letter to the Editor, SI, July/August 2011) discussed the possibility of a time viewer that would not disturb the past.

However, we cannot observe without affecting that which we observe in some, possibly minuscule, way. If the time viewer extracted photons from the past, then the effect of those photons on the past would change. Depending on how it worked, the time viewer might, in fact, obscure the vision of some animal or person, bringing it to injury or death. If used in the same place over a period of time, it might siphon off enough photons to damage vegetation.

Van Knowles
Lexington, Kentucky

[FEEDBACK

The letters column is a forum on matters raised in previous issues. **Letters should be no longer than 225 words.** Due to the volume of letters we receive, not all can be published. Send letters as email text (not attachments) to letters@csicop.org. In the subject line, provide your surname and informative identification, e.g.: "Smith Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122, or fax it to 505-828-2080.

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[THE LAST LAUGH

BENJAMIN RADFORD

HIDDEN MESSAGES

by Dave Thomas

The following letters are a simple substitution cipher. If R stands for L, it will do so everywhere. Solution is by trial and error. Hint: Look for patterns in words; for example, the scrambled phrase "JRXJ JRQ" might represent "THAT THE."

PUZZLE

"ZBFGINF OKMBDFBIE XHIA FGK EIHA, JHISHKCC BC EIF JICCBYUK."—XHDER TDJJD

CLUE: M = V

PREVIOUS PUZZLE SOLUTION (July/August 2011):
"THE ROOT OF ALL SUPERSTITION IS THAT MEN OBSERVE WHEN A THING HITS, BUT NOT WHEN IT MISSES."—FRANCIS BACON

SUPER-SECRET WORD: PRECLUSION
(Instructions: www.nmsr.org/secretword.htm)

SKEPTICAL ANNIVERSARIES

by Tim Farley

November 15, 1966: Five people sighted what was later known as "Mothman" while driving in West Virginia.

December 9, 1531: The Our Lady of Guadalupe Marian apparition gave rise to what is now the second most-visited Catholic shrine in the world.

December 10, 1986: Creationism court case *Edwards v. Aguillard* was argued before the United States Supreme Court.

December 13, 1976 in *The New Yorker* an article titled "Microwaves" by Paul Brodeur helped launch the modern health scare around electromagnetic fields.

Hidden Messages Puzzle Contest

Submit your solution by e-mail to bradford@centerforinquiry.net or via postal mail to: Benjamin Radford The Last Laugh P.O. Box 3016 Corrales, NM 87048
Winner will be chosen at random from the first three correct submissions received by both email and postal mail.

This issue's prize: a DVD of the documentary *Giving Up the Ghost*, about modern ghost hunters, from Exspiro Productions

BIZARRO

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Independent Investigations Group (IIG), Center for Inquiry–*West*, 4773 Hollywood Blvd, Los Angeles, CA 90027. Tel.: 323-666-9797. www.iigwest.com

Sacramento Skeptics Society, Sacramento. Terry Sandbek, President. 4300 Auburn Blvd. Suite 206, Sacramento CA 95841. Tel.: 916 489-1774. Email: terry@sandbek.com

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The Denver Skeptics Meetup Group. Elaine Gilman, President. Skype address: elaine.gilman. 965 S. Miller Street, 302, Lakewood, CO 80226. http://skeptics.meetup.com/131/

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New England Skeptical Society (NESS) New England. Steven Novella M.D., President. Tel.: 203-281-6277; Email: board@theness.com. 64 Cobblestone Dr., Hamden, CT 06518 www.theness.com

D.C./MARYLAND

National Capital Area Skeptics NCAS, Maryland, D.C., Virginia. D.W. "Chip" Denman. Tel.: 301-587-3827. Email: ncas@ncas.org. PO Box 8428, Silver Spring, MD 20907-8428 http://www.ncas.org

FLORIDA

Tampa Bay Skeptics (TBS) Tampa Bay, Florida. Gary Posner, Executive Director. Tel.: 813-849-7571; Email: tbs@centerforinquiry.net. c/o O'Keefe, 4011 S. Manhattan Ave. #139, Tampa, FL 33611-1277. www.tampabayskeptics.org

The James Randi Educational Foundation. James Randi, Director. Tel: (954)467-1112; Email jref@randi.org. 201 S.E. 12th St. (E. Davie Blvd.), Fort Lauderdale, FL 33316-1815. www.randi.org

ILLINOIS

Rational Examination Association of Lincoln Land (REALL) Illinois. Bob Ladendorf, Chairman. Tel.: 217-546-3475; Email: chairman@reall.org. PO Box 20302, Springfield, IL 62708 www.reall.org

Chicago Skeptics Jennifer Newport, contact person. Email: chicagoskeptics@gmail.com. www.chicagoskeptics.com

KENTUCKY

Kentucky Assn. of Science Educators and Skeptics (KASES) Kentucky. 880 Albany Road, Lexington, KY 40502. Contact Fred Bach at Email: fredwbach@yahoo.com; www.kases.org; or (859) 276-3343

LOUISIANA

Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM) Louisiana. Marge Schroth. Tel.: 225-766-4747. 425 Carriage Way, Baton Rouge, LA 70808

MICHIGAN

Great Lakes Skeptics (GLS) SE Michigan. Lorna J. Simmons, Contact person. Tel.: 734-525-5731; Email: Skeptic31@aol.com. 31710 Cowan Road, Apt. 103, Westland, MI 48185-2366

Tri-Cities Skeptics, Michigan. Gary Barker. Tel.: 517-799-4502; Email: barkerg@svol.org. 3596 Butternut St., Saginaw, MI 48604

MINNESOTA

St. Kloud Extraordinary Claim Psychic Teaching Investigating Community (SKEPTIC) St. Cloud, Minnesota. Jerry Mertens. Tel.: 320-255-2138; Email: gmertens@stcloudstate.edu. Jerry Mertens, Psychology Department, 720 4th Ave. S, St. Cloud State Univ., St. Cloud, MN 56301

MISSOURI

Skeptical Society of St. Louis (SSSL) St. Louis, Missouri. Michael Blanford, President. Email: info@skepticalstl.org. 2729 Ann Ave., St. Louis, MO 63104 www.skepticalstl.org

St. Joseph Skeptics
P.O. Box 8908
St. Joseph MO, 64508-8908

NEVADA

Skeptics of Las Vegas, (SOLV) PO Box 531323, Henderson, NV 89053-1323. Email: rbanderson@skepticslv.org www.skepticslv.org

NEW MEXICO

New Mexicans for Science and Reason (NMSR) New Mexico. David E. Thomas, President. Tel.: 505-869-9250; Email: nmsrdave@swcp.com. PO Box 1017, Peralta, NM 87042. www.nmsr.org

NEW YORK

New York City Skeptics Michael Feldman, president. PO Box 5122 New York, NY 10185. www.nycskeptics.org

Inquiring Skeptics of Upper New York (ISUNY) Upper New York. Michael Sofka, 8 Providence St., Albany, NY 12203

Central New York Skeptics (CNY Skeptics) Syracuse. Lisa Goodlin, President. Tel: (315) 446-3068; Email: info@cnyskeptics.org, cnyskeptics.org 201 Milnor Ave., Syracuse, NY 13224

OHIO

Central Ohioans for Rational Inquiry (CORI) Central Ohio. Charlie Hazlett, President. Tel.: 614-878-2742; Email: charlie@hazlett.net. PO Box 282069, Columbus, OH 43228

South Shore Skeptics (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; Email: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 www.southshoreskeptics.org

Association for Rational Thought (ART) Cincinnati. Roy Auerbach, president. Tel: (513)-731-2774, Email: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH 45212. www.cincinnatiskeptics.org

OREGON

Oregonians for Science and Reason (O4SR) Oregon. Jeanine DeNoma, president. Tel.: (541) 745-5026; Email: wilkinsa@peak.org; 39105 Military Rd., Monmouth, OR 97361. www.04SR.org

PENNSYLVANIA

Philadelphia Association for Critical Thinking (PhACT), much of Pennsylvania. Eric Krieg, President. Tel.: 215-885-2089; Email: erickrieg@verizon.net. By mail c/o Ray Haupt, 639 W. Ellet St., Philadelphia PA 19119

TENNESSEE

Rationalists of East Tennessee, East Tennessee. Carl Ledenbecker. Tel.: (865)-982-8687; Email: Aletall@aol.com. 2123 Stonybrook Rd., Louisville, TN 37777

TEXAS

North Texas Skeptics NTS Dallas/Ft Worth area, John Blanton, Secretary. Tel.: (972)-306-3187; Email: skeptic@ntskeptics.org. PO Box 111794, Carrollton, TX 75011-1794. www.ntskeptics.org

VIRGINIA

Science & Reason, Hampton Rds., Virginia. Lawrence Weinstein, Old Dominion Univ.-Physics Dept., Norfolk, VA 23529

WASHINGTON

Society for Sensible Explanations, Western Washington. Tad Cook, Secretary. Email: K7RA@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattleskeptics.org

PUERTO RICO

Sociedad De Escépticos de Puerto Rico, Luis R. Ramos, President. 2505 Parque Terra Linda, Trujillo Alto, Puerto Rico 00976. Tel: 787-396-2395; Email: Lramos@escepticospr.com; www.escepticor.com

The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703, Amherst NY 14226-0703.

International affiliated organizations listed at www.csicop.org

CENTERS FOR INQUIRY

www.centerforinquiry.net/about/centers

Transnational
3965 Rensch Road, Amherst, NY 14228
Tel.: (716) 636-4869

Austin
PO Box 202164, Austin, TX 78720-2164
Tel.: (512) 919-4115

Chicago
PO Box 7951, Chicago, IL 60680-7951
Tel.: (312) 226-0420

Indianapolis
350 Canal Walk, Suite A, Indianapolis, IN 46202
Tel.: (317) 423-0710

Michigan
3777 49th Street SE, Grand Rapids, MI 49512
Tel.: (616) 698-2342

New York City
PO Box 26241, Brooklyn, NY 11202
Tel.: (347) 987-3739

San Francisco
email: sf@centerforinquiry.net

Tampa Bay
4011 S. Manhattan Ave. #139, Tampa, FL 33611-1277
Tel.: (813) 849-7571

Washington, DC
621 Pennsylvania Ave. SE, Washington, DC 20003
Tel.: (202) 546-2330

West
4773 Hollywood Blvd., Hollywood, CA 90027
Tel.: (323) 666-9797

Argentina
Av. Santa Fe 1145 - 2do piso, (C1059ABF)
Buenos Aires, Argentina
Tel.: +54-11-4811-1858

Canada
216 Beverley Street, Toronto, Ontario M5T 1Z3,
Canada. Tel.: (416) 971-5676

China
China Research Institute for Science Popularization,
NO. 86, Xueyuan Nanlu Haidian Dist., Beijing,
100081 China
Tel.: +86-10-62170515

Egypt
44 Gol Gamal St., Agouza, Giza, Egypt

France
Dr. Henri Broch, Universite of Nice, Faculte des
Sciences, Parc Valrose, 06108, Nice cedex 2,
France Tel.: +33-492-07-63-12

Germany
Kirchgasse 4, 64380 Rossdorf, Germany
Tel.: +49-6154-695023

India
A 60 Journalist colony, JubileeHills,
Hyderabad-500033, India
Tel.: +91-40-23540676

London
Conway Hall, 25 Red Lion Square,
London WC1R 4RL, England
email: slalvani@centerforinquiry.net

Nepal
Humanist Association of Nepal,
PO Box 5284, Kathmandu Nepal
Tel.: +977-1-4413-345

New Zealand
email: bcooke@centerforinquiry.net

Nigeria
PO Box 25269, Mapo, Ibadan, Oyo State, Nigeria
Tel.: +234-2-2313699

Peru
D. Casanova 430, Lima 14, Peru
email: cipsiperu@yahoo.com

Poland
Lokal Biurowy No. 8, 8 Sapiezynska Sr.,
00-215, Warsaw, Poland

Romania
Fundatia Centrul pentru Constiinta Critica
Tel.: (40)-(0)744-67-67-94
email: CenterforInquiry.Romania@gmail.com

Russia
Dr. Valerii A. Kuvakin, 119899 Russia, Moscow,
Vorobevy Gory, Moscow State Univ.,
Philosophy Department

Senegal
PO Box 15376, Dakar – Fann, Senegal
Tel.: +221-501-13-00

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